

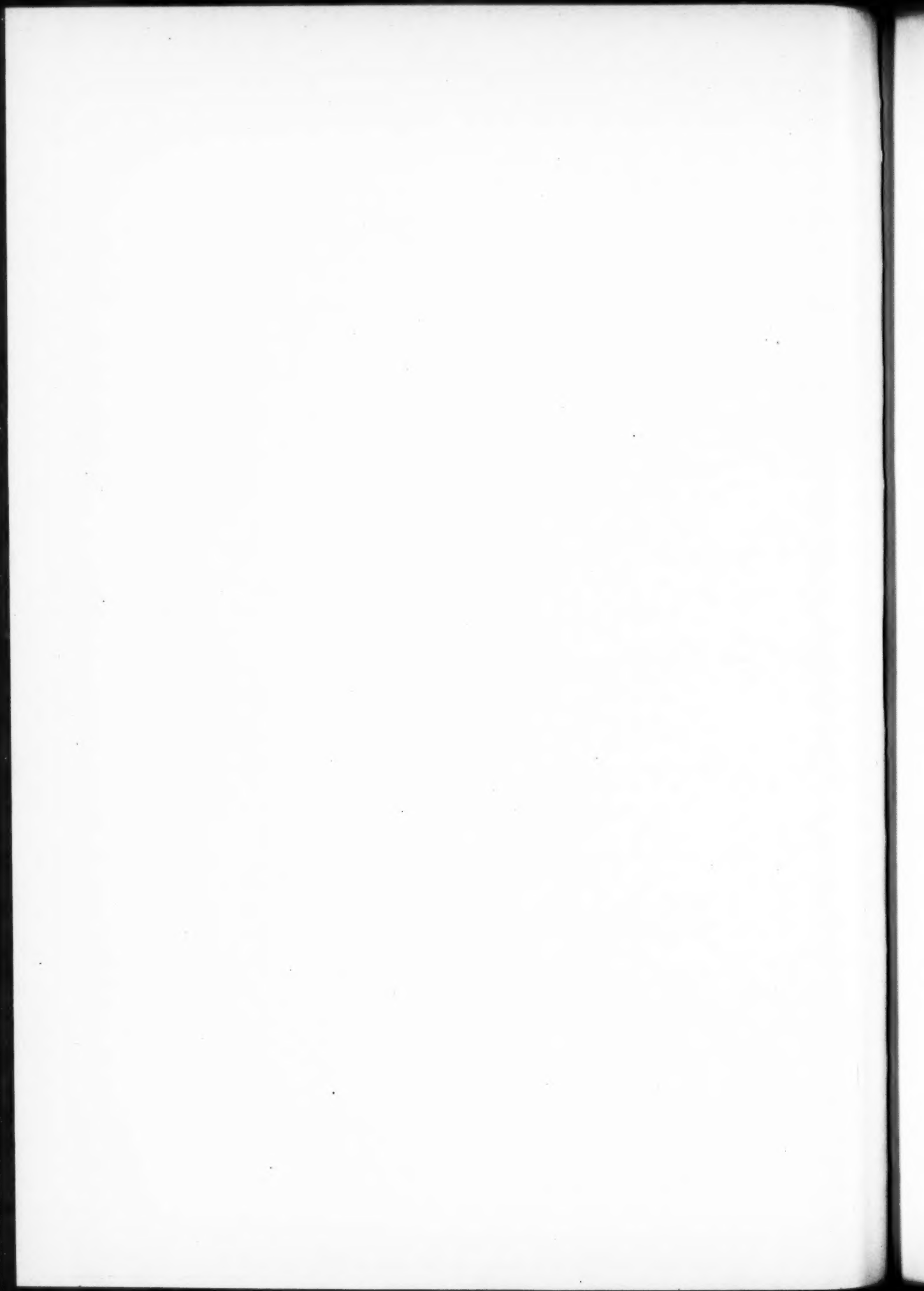
# MILITARY REVIEW



**COMMAND AND GENERAL STAFF SCHOOL**

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COMMAND AND GENERAL STAFF SCHOOL

# MILITARY REVIEW

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CAPTAIN DON E. GRIBBLE, *Field Artillery*----- Assistant Editor

CAPTAIN CHARLES B. REALEY, *Army of the United States*----- Assistant Editor



## February 1944



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## Acknowledgment

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# Medical Service in the North African Campaign

MAJOR GENERAL ALBERT W. KENNER, *United States Army*  
Assistant to The Surgeon General

THE MEDICAL service for the initial landings in North Africa began with medical planning and its correlation with the planning of the General Staff and the Special Staff. Three synchronized landings were made, one in Morocco by the Western Task Force, a second at Oran by the Central Task Force, and a third at Algiers by the Eastern Task Force. This article relates only to the Western Task Force initially and to the allied North African Force subsequently.

Early in the planning, it was realized that the desirable was also the unattainable owing to the restrictions imposed by tonnage available, and that the

evacuation and hospitalization afloat. Therefore, the Army medical service became operative upon the attainment of beach heads at high tide levels. Lacking any type of Army medical unit that might afford hospitalization, all transports were equipped by the Navy with medical supplies and personnel necessary to assume the role of evacuation and station hospitals. All Army medical supplies and unit equipment were combat loaded and so dispersed in the convoy that each ship carried balanced stockage of unit maintenance for a thirty-day period. This was necessary to obviate loss by enemy action of large amounts of certain categories of medical supplies. Blood plas-

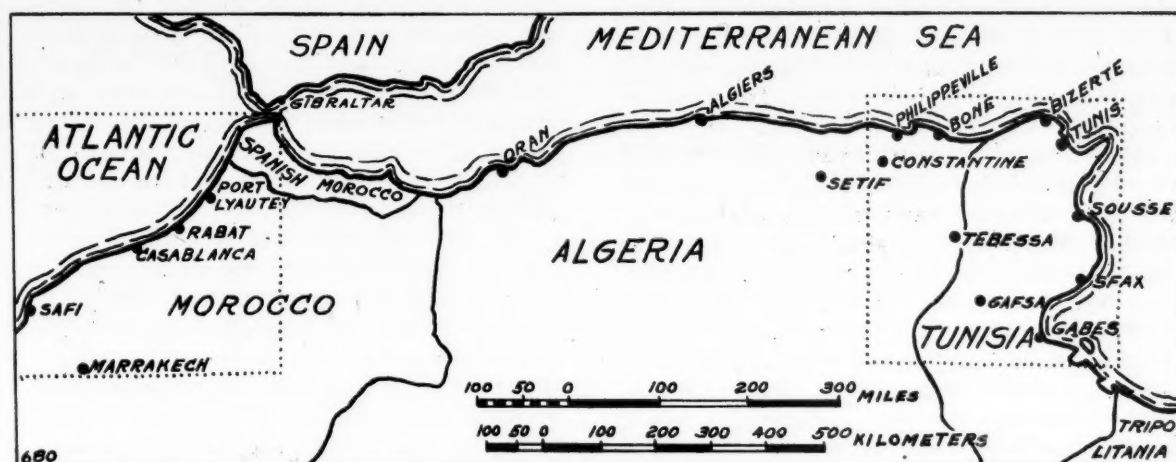


FIGURE 1.  
THE AREA ENCLOSED IN DOTTED LINES AT THE LEFT IS SHOWN IN MORE DETAIL  
IN FIGURE 2, AND THAT AT THE RIGHT IN FIGURE 3.

medical service would have to be "run on a shoestring." An amphibious operation was a new experience for most of us, and I believe we were thinking in terms of commando tactics and Dieppe. However, it was decided that the first convoy would carry fighting men and their tools and such service personnel and equipment as could be reduced to the minimum to assure first and second echelon medical service. Only attached medical and skeletonized medical battalions could be included in this initial landing force. The evacuation hospitals were on the second convoy. The fixed installations, station and general hospitals, did not arrive until the end of December.

The medical planning for this operation was expressed in the joint medical plan prepared by the Surgeon of the Western Naval Task Force and the Surgeon of Task Force "A." The Navy's responsibility was defined as medical care to personnel of all services between port of embarkation and high watermark on overseas landing beaches, including

ma for 10% of the command, special drugs, and biologicals essential for the operation augmented unit maintenance. Certain medical vehicles, organic to the medical battalion, were also combat loaded, but they were inadequate and in some instances were commandeered by officers of combat elements as they came ashore. It may be mentioned that vehicles were waterproofed and were landed in the surf from landing boats with motors running. Incidentally, some of them stayed in the surf. Insect repellents, louse powder, methyl bromide, etc., were carried by the engineers, while the Quartermaster was responsible for the supply of white gasoline for autoclaves and kerosene for refrigerators.

*Movement Overseas Phase.*—Hospitalization was furnished by the Navy. The senior Army medical officer on each transport reported for duty to the ship surgeon immediately upon embarking. Army medical officers conducted sick call, made the usual sanitary inspections, and functioned cooperatively



with the ship's surgeon. Naval medical personnel was augmented on each transport by a ship's platoon of Army medical personnel furnished by the Port of Embarkation Commander. Casualty estimates, based on the assumption that the beach head would be secured in three days (or else), were projected as a certain relatively high percentage of combat elements committed. This implied that each transport would receive two to four hundred patients, depending upon its size. Fortunately, casualty rates were relatively low, permitting the removal of these ship platoons for duties ashore after the armistice.

*Landing Phase.*—Medical personnel and equipment debarked as ordered by the combat unit commander. Medical supplies had priority after ammunition and aviation gasoline. One company aid man (medical) accompanied each company in the assault, carrying his individual equipment, two canteens of water, and a bag containing surgical dressings, bandages, etc. The battalion surgeon and the rest of the detachment landed with the fourth wave carrying four litters and one medical bag in each LCP (Landing Craft Personnel). Each combat group commander detailed one medical officer and eight enlisted, from medical personnel available in his command, to assist each Naval beach party in the treatment, collection, and seaward evacuation of casualties. Initially only first echelon medical service was furnished, wounded were given first aid and placed in small collecting stations in relatively protected places, back of sand dunes, depressions, slit trenches, etc., until the beach head was sufficiently advanced to permit evacuation by landing craft. In the planning for this invasion, it was decided that casualties would be evacuated by landing craft to the transports assuming the role of evacuation hospitals. All casualties with an expectancy in excess of thirty days were to be returned to base ports, while those of lesser expectancy would be returned to shore prior to the departure of the convoy on its return to the United States. This plan was sound, but did not envisage the loss of so many landing craft or the power of a twelve-foot surf. The beach was enfiladed by artillery and strafed by planes. As a result few cases were evacuated seaward during the first two days. Subsequently, with the securing of the harbor of Fedala, evacuation was accomplished as planned.

In the afternoon of the first day, one clearing platoon was established in a casino on the beach where Army and Navy surgeons, under blackout conditions and with field equipment only, rendered the necessary medical service. It was there that the life saving properties of blood plasma and the efficiency of the sulphur drugs were demonstrated. As a digression, the writer met an officer a few weeks ago, now on active duty, who was shot down over Fedala that eighth day of November, incurring a compound fracture of both bones of the right leg and five .30-caliber gunshot wounds. He was treated in the casino and later

sent to the United States by the returning convoy. He had an uneventful recovery, his fractures healed without deformity or impairment function, and he stated that he had had no infection. In this same casino, with its handful of doctors, over four hundred burned sailors were treated during one night. One hundred of them were so badly burned that they had to be given repeated transfusions with blood plasma. Only two died during the time they were under treatment by this little group. Two more died subsequently aboard naval vessels. Since the casino, including the porches, could accommodate no more than 150 litter cases, schools and other public buildings in the town were taken over and surgical wards established, staffed with men from a collecting company. French families received and nursed some of the wounded. Despite the lack of facilities, the mortality rate among wounded reaching this clearing station was remarkably low.

At first the patients were subsisted on the "K" ration; after a few days, however, the "B" ration was available and liquid diets were prepared for them. Initially, also, and until the engineers could land water purification units and establish water points, all water used for drinking and cooking was landed in five-gallon cans from transports. All personnel debarking carried two canteens and a tube of twelve "Halazone" tablets for the purpose of purifying water obtainable from local sources. This was a fortunate provision since the water supply of the entire region was obtained from springs in the Mamora Forest, 140 kilometers to the north, and conducted by mains along the coast. During the bombardment by our naval guns, the water main was broken in numerous places.

A brief presentation of the tactical situation as of 8 November 1942 will facilitate an appreciation of the medical problems encountered. The approximate strength and disposition of enemy troops was known prior to departure from the United States and it was patent that the element of surprise was essential for the successful accomplishment of the mission. The Western Task Force was well supported by the Naval Task Force and had adequate air coverage. Operationally it was divided into three task forces for the landing. The main objective of the entire force was the capture of Casablanca. Sub-task force "X" had as its mission the capture of Mehdiya-Plage and Port Lyautey Air Field by 1200, the capture of the air field at Sale forty kilometers to the south, and the security of the left flank of the major force. The "Y" force was to make the main effort. Its mission was the establishment of the beach head at Fedala, the capture of the town, and the initiation of the operation designed to capture Casablanca. The "Z" force had as its missions: capture Safi, secure crossings, contain enemy elements known to be garrisoned at Marrakech, and aid in the capture of Casablanca by envelopment. These three forces were not mutually

# MEDICAL SERVICE IN THE NORTH AFRICAN CAMPAIGN

supportive and were separated by considerable distances. It is 130 kilometers from Port Lyautey to Casablanca and over 250 kilometers from the latter place to Safi. To cover these distances there were available eight ambulances of the cross-country type

divided against itself politically into three major groups. In order to insure against political chaos it was essential that the current government in this protectorate be supported, bearing in mind that one of the main reasons for securing Casablanca was the development of an Atlantic base to assure the supply of our troops in North Africa in the event of a closing of the Straits of Gibraltar by enemy action. We could not fight a hostile populace and accomplish that mission with the force available to us. Immediately, therefore, liaison was established with civil and military authorities and the *entente cordiale* cultivated.

Our wounded in military hospitals were transferred to our own medical facilities as they were developed. Large public buildings were taken over and converted into military hospitals. The two evacuation hospitals that arrived in the second convoy were diverted from their normal function and established a general hospital at Casablanca and a station hospital at Rabat. They functioned in their respective capacities until the arrival of station and general hospitals in subsequent convoys. It will, therefore, be appreciated that the Western Task Force had a dual role, the security of this vast area and the establishment of a major base. Everyone, therefore, doubled in brass. The surgeon had to act as a service of supply surgeon and as surgeon of a field force.

One of our immediate tasks was the establishment of sanitized zones in all areas occupied by our troops. This could only be accomplished by enlisting the support of public health agencies and arranging a co-ordinated program of disease control and sanitation. With this in mind a conference was held with representatives from the indigenous civil and military medical authorities a few days after the armistice and the initiation of the indicated planning effected. The public health agencies of Morocco were well organized and directed but lacked many items necessary for the accomplishment of their purpose. They had no gasoline for their vehicles, no Paris green, no oil for spraying, and lacked many drugs needed in the treatment of communicable diseases. These items had to be furnished by us since they had no communication with the mother country. During our planning for the invasion we had received information relative to endemic areas and prevalent diseases, so had included adequate supplies of the necessary medicines. We had arranged with the engineers for the shipment of screening material, insect repellents, and insecticides, all personnel was immunized prior to embarking against those diseases for which we had protective sera and vaccines, and an effort was made to indoctrinate combat personnel with the necessity of close adherence to prescribed sanitary procedures by informative talks and circulars. We knew that venereal disease, malaria, and typhus fever were rampant throughout the area, that cholera and dysentery, both amoebic and bacillary, attained epidemic proportions in certain areas, and

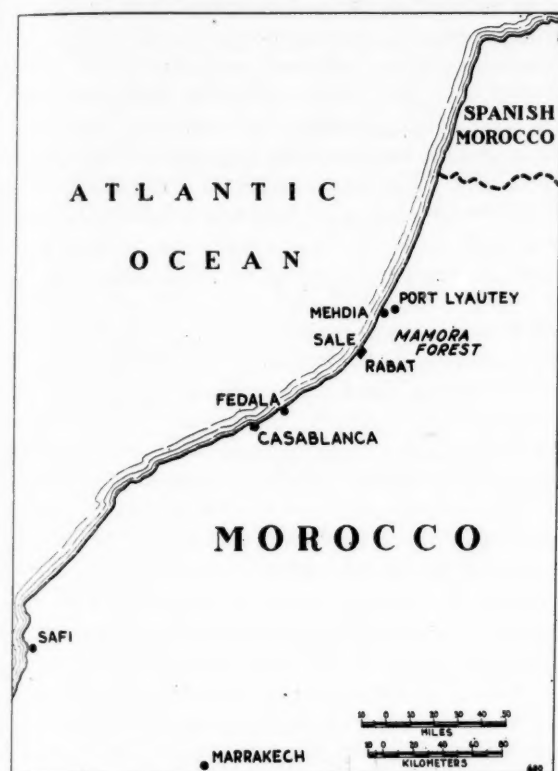


FIGURE 2.

and twelve armored ambulances (M-3, half-tracks). The medical service for the entire force was rendered by attached medical troops, two and one-half (five platoons) clearing companies, and three collecting companies. Personnel consisted of 102 Medical Department officers and 1,418 enlisted, including ships platoons—and no nurses. Naval fire support groups supported the ground attack during daylight on call from battalion landing teams and without call against hostile defense installations. The Naval Task Force was also responsible for containing and destroying the enemy fleet elements in Casablanca harbor and any others that might be coming from the south or north. The Naval air group attacked enemy air and naval craft in Casablanca, made reconnaissance of the area commencing at daylight, and executed bombing and strafing missions against enemy troops. By the Grace of God, and a disinclination on the part of some elements of the enemy forces to make more than a half-hearted effort, all objectives were seized without unusual losses.

**Reconstruction Period.**—Following the armistice, the re-establishment of the traditionally amicable relations that had characterized the intercourse between ourselves and our erstwhile enemy became a major concern. The civil and military population was



that plague was a constant health menace at all ports. By arrangement with the health authorities, military and civilian, reports on the incidence of the communicable diseases were sent to the Surgeon, Western Task Force. In one instance thirteen cases of plague developed in a suburb of Casablanca where our troops were billeted. The troops were immediately moved from that area. Appreciating the difficulties inherent in any attempt to sanitize all of Morocco, a sanitized zone two miles in depth was established around all areas where troops were bivouacked or billeted.

It was impossible to secure enough buildings to billet all troops as all of the cities in Morocco were overcrowded with refugees from France, Southern Europe, and the African Mediterranean littoral. Casablanca, having a normal population of 80,000, was housing 200,000. Sanitary facilities were inadequate. There were many open sewers and the water carriage system evacuated its contents into the sea where the tide washed everything back onto the beaches. The water supply was inadequate and always under suspicion as in the dry seasons the Arabs frequently broke the conduits to create pools for watering stock. Amoebic dysentery attained epidemic proportions in several areas. In Fez in one month over fifteen hundred new civilian cases were diagnosed. During certain seasons the flies are so thick that they fly into the mouth when one is speaking. This applies particularly to Tunisia in the region from Sfax to Gabes where bacillary dysentery epidemics begin about the middle of April and continue throughout the summer. Since the Arab uses his right hand for eating and, in accordance with the religious precepts defined by the Koran, eschews the use of knife and fork, the transmission of the enteric diseases is facilitated. The ubiquitous Arab is usually infested. Since the war, there have been practically no importations of cotton or woolen goods into Morocco and the Arabs have been hard-pressed to secure material to cover themselves. Typhus fever finds, therefore, a fertile field among these people and many of them die yearly from this disease.

Malaria presented a major problem throughout all of Africa. The vectors (mosquitoes) of this disease are found everywhere. Certain species flourish in the mountains and others in the desert fringes where no water is discernible. The splenic index in some areas runs as high as 100% while throughout all of North Africa it will probably average 50%. It is apparent that there is an ever-present tremendous human reservoir. Malaria was found to be a year-around disease although there are fewer cases during the winter months. The nights in North Africa during the winter season are very cold, but the sun is hot. The mosquitoes hibernate in Arab huts and in marshy areas, but under the influence of the hot sun they will circulate during a few hours of the day. In several divisions of our troops, bivouacked in the Mamora Forest during December and January, quite

a few cases developed. The disease was controlled, however, by the use of repellents and the application of control measures prescribed in pertinent directives. Those cases contracted in North Africa were of the benign type while those resulting from exposure in occidental Africa terminated fatally in several instances.

Venereal disease was very prevalent in all of the larger towns and cities, probably because of the large transient population of refugees leading a hand-to-mouth existence. As expressed by the Chief of Police in Casablanca, all prostitutes, clandestine and otherwise, fall into three main infections categories; the *poule de luxe*, usually the friend of an official and therefore protected, 25% infected; the waitress and barmaid, etc., 50% infected; and the Arab woman, 100% infected. The prostitutes in the government-controlled "medina" probably have the lowest incidence, around 10%. With an exchange rate of seventy-five francs to the dollar, the American soldier belonged to the privileged class, to the obvious envy and discomfiture of the underpaid French soldier. Venereal disease rates were kept within bounds, insofar as white troops were concerned, by the application of the usual control measures.

Despite all of these health hazards the rates for sickness compared very favorably with those obtaining among troops in the continental United States. The medical facilities of the base developed as convoys brought in additional medical troops and equipment. Medical supply depots were filled to a forty-five-day level, a laboratory was established, and an efficient medical service established. The Atlantic Base Section became an entity with the arrival of its commanding officer and staff, and was divorced from the Western Task Force.

*The Tunisian Campaign.*—It will be recalled that two task forces from England made initial and synchronized landings in French North Africa, one an American force at Oran, the other a British force at Algiers. They encountered relatively little resistance and speedily attained their objectives. Immediately following the armistice, by a sort of political metamorphosis, the French ceased to be an enemy and became an ally determined to expel the Axis forces from Africa. The British and American forces exploited their advantage and drove rapidly toward Tunisia. They encountered severe enemy reaction, however, to the west of Tunis from von Arnheim's army and fell back on a line running roughly from Medjez el Bab south to Tebessa.

The situation, as of the end of December 1942 was roughly as follows: An Allied Force Headquarters had been established at Algiers with General Eisenhower as Commander in Chief. The General and Special Staff sections were headed up by British staff officers in some instances and Americans in others, but in all staff sections each staff officer had his "opposite number." The Surgeon of the Allied Force

# MEDICAL SERVICE IN THE NORTH AFRICAN CAMPAIGN

was a British medical officer with the rank of Major General. Bases had been established at Oran by the Americans and at Algiers by the British. British advance bases were operating at Philippeville and Bone about 300 miles to the east of Algiers. The American force was supplied by the British. A Communication Zone Headquarters had been established



FIGURE 3.

at Setif by the British, but was not operative at that time. There was no road net and only one railroad, single track, between Algiers and Constantine, with a maximum capacity of eleven trains daily. The main road from Algiers was tortuous, in a poor state of repair, and reduced convoy speed to an average of six miles per hour. The desert may be a tactician's paradise, but it is surely a Quartermaster's "hell."

British First Army Headquarters was located at Constantine, about 200 kilometers from the front, with an advance echelon at Souk Ahras. The American force, operating as battalion and regimental combat teams, was then under the command of the Commanding General of the British First Army. Later the American Second Corps was organized as an independent corps with headquarters outside Tebessa, 200 kilometers to the south of Souk Ahras and an equal distance from Constantine. A French force in the vicinity of Pichon was interposed between the British and American forces. The French force was composed of well-disciplined and trained professional soldiers but was inadequately equipped and had to be closely supported by American Air, with headquarters at Tebessa. In the meantime, Montgomery's 8th Army was chasing Rommel's Axis army across Libya and was approaching the Tripolitania and the Mareth Line. It became apparent that Rommel was trying to effect a junction with von Arnheim who had been greatly reinforced by troops flown to him

from Sicily, and that a considerable increase in the activity of the Tebessa sector should be anticipated. With this in mind, the American Second Corps was organized with headquarters at Tebessa, about ninety miles from points where contact was had with the enemy. The troops of this corps were spread pretty thin, there was no front line as such, combat teams were not mutually supportive, and the sector was held with a prayer.

The difficulties attendant upon the medical servicing of our troops should be apparent. It was obvious that medical units must have flexibility and mobility as their outstanding characteristics. They had to be adaptable to the operational procedures and tactical maneuverability of the troops they serviced and they had to be self-contained. Due to the distances involved, the inadequate communications in this region, and the essential time element, adequate surgical care had to be made available in forward areas.

Initially all hospitalization was a responsibility of the British as the American troops were under British command. We were establishing general hospitals at Oran and evacuation hospitals were arriving from the United Kingdom; about all we had were the attached medical and the medical battalions organic in the divisions. Our wounded were, therefore, cared for in British installations. The British medical service was echeloned pretty much as ours is. At Medjez el Bab, the battalion aid station was located in a railroad station. Patients were evacuated to a field ambulance (clearing company) located about two miles back, in a farm, under direct observation, and within range of field artillery. Major surgery was being performed by well-trained surgeons. One case was seen, a gunshot wound of the back, that had had a kidney removed a few hours previously. Many cases of compound fracture due to high explosive had been adequately treated, and several brain cases had received emergency treatment. (These cases were later seen in a general hospital and were in excellent condition.) At Beja, about forty kilometers to the rear, one field ambulance, capacity 200, was located in a school building. Its personnel was augmented by a surgical and shock team. These installations were evacuated by ambulance to a casualty clearing station (evacuation hospital) at Souk el Khemis, a distance of twenty-seven kilometers. This installation was well equipped and well staffed. Major surgery was performed by the regular staff augmented by surgical teams and a transfusion unit. In passing, it may be remarked that the British use whole blood sent forward from bases in refrigerated units. Each transfusion unit has its own equipment which includes a refrigerator. From this, C.C.S. patients were evacuated to Souk Ahras, about eighty kilometers, to a 200-bed general hospital located in a school. Evacuation of patients from Souk el Khemis was accomplished by a Michelin car, diesel propelled on a narrow gauge track, carrying fourteen litters, and by



ambulance. Evacuation to bases was accomplished by hospital trains.

The British General Hospitals vary in size from a 200 to 1600-bed capacity, established in buildings or tents, and are more mobile than ours. Their tentage is far superior to ours as it is double walled, ventilated and lighted by windows, and is of a black-out type. They have no organic transportation, are moved by the Quartermaster, and have attached to them a platoon of sappers whose duties include the erection of tents, ditching, and road making. Their patients are subsisted on the field ration supplemented (as ordered by the surgeons) by what they call medical comforts. These medical comforts comprise soups, ale, canned vegetables, and other delicacies. They do not have the equipment or staffs of our general hospitals. American patients in British installations received excellent care, however, and formed quite an attachment for their British comrades.

With the formation of the American Second Corps, we took over the hospitalization of our own wounded, aided in small measure by the British who made available to us the twelve Casualty Clearing Stations and some ambulances for evacuation to British hospitals in the vicinity of Constantine. These facilities were only used when weather conditions and enemy aerial activity precluded evacuation by air. With the distances involved, poor communications, and lack of adequate United States medical units, it soon became obvious that we should have to evacuate by plane. C-47 planes bringing supplies to the forward area returned to our bases with wounded. Returning by the southern route from Youks (fifteen miles west of Tebessa), fighter escort was not required and evacuation to base installations was accomplished in about four hours whereas it would have taken twenty-four hours by train or forty-eight by ambulance convoy. In some instances, three to four hundred wounded were evacuated by this means in one day. In many instances, men wounded in the morning found themselves in the operating theater of a general hospital at Oran in the late afternoon. In air evacuation, a holding unit must be operative in the vicinity of the field.

At the time of Rommel's breakthrough at Kasserine in February, medical units of the 2nd Corps were disposed as follows: The surgical hospital, one hospitalization section, and the mobile surgical unit at Feriana; one evacuation hospital sited near Tebessa had 500 patients; another evacuation hospital was in reserve in the woods near Tebessa; one medical battalion had established a clearing station near Bekkaria, while another medical battalion was oper-

ative in the area between Gafsa and Tebessa, a distance of about 100 kilometers. The corps, with its organization in depth, involved considerable distances. Axial evacuation from forward areas was slow because of the fact that there was but one road in this stretch of desert. Due to the loss of the Faid Pass high ground, the right flank of the corps was imperiled at Gafsa and the surgical hospital was moved from Feriana and sited at Bou Chebka. This movement was begun at 9:00 P.M. and completed by 6:00 A.M. by pooling the 2½-ton trucks of two medical battalions, the patients being evacuated to an evacuation hospital near Tebessa. At Sbeitla one medical company of an armored division had established a clearing station in which definitive surgery was performed. One battalion of a medical regiment set up a relay post near Kasserine in support of the station at Sbeitla. On the third day of the attack a retrograde movement of the surgical hospital from Bou Chebka to Youks les Bains was accomplished and this unit received patients from the evacuation hospitals which had to be moved about seventy kilometers back of Tebessa to Ain Beida. About forty-eight hours were required to effect the movements of the two evacuation hospitals by trucks controlled by the Corps Surgeon. Changes in the tactical situation forced a withdrawal of all medical elements with combat units to the vicinity of Tebessa and Youks.

Patients were evacuated to Ain Beida and to a station hospital at el Guerrah by the ambulances of a medical battalion reinforced by a convoy of twenty-eight British Austin ambulances. All moves were made without incident and without any loss of personnel or material despite the fact that the German was exploiting his initial penetration successfully. The training of medical personnel paid big dividends during this action as only well trained personnel could have cleared a surgical hospital of 125 patients and loaded in four and a half hours. All patients in these mobile medical units were evacuated safely to the communications zone and none were abandoned to the enemy. Evacuation by air from Youks to base hospitals was utilized until loss of forward air fields prevented its further employment.

These experiences emphasized the importance of flexibility and mobility of medical units in a forward area and the absolute requirement that medical troops be trained to the highest degree of efficiency in the doing of those things required of them in combat. The life saving qualities of blood plasma were demonstrated in innumerable cases, and the early application of proper surgical measures, supplemented by the sulpha drugs, resulted in a reduction of mortality rates without precedent.

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Use the street of "By and By" and you will arrive at the street of "Never."

—Spanish Proverb

# The Tactical Employment of Fighter-Bombers

WING COMMANDER M. T. JUDD, *Royal Air Force*  
Instructor, Command and General Staff School

**D**URING this war the Germans were the first to carry bombs on their fighters. When, during the Battle of Britain, the RAF demonstrated the German fighters' inability to protect their bomber formations and the South of England became ankle-deep in Ju 87's, the Luftwaffe High Command sent over Messerschmitt fighters carrying small bombs. The speed of these fighter-bombers made it difficult to intercept them and once they had dropped or jettisoned their bombs they could fight off attacks on equal terms with the Hurricanes and Spitfires. In comparison with the Ju 87's (Stukas) their bombing was inaccurate; they usually were content to aim from high altitude at large areas—such as London—where any hit was likely to do some damage. As a result they had little more than nuisance value.

The Stuka, equipped with diving brakes to enable it to dive almost vertically without gaining excessive speed, and carrying over 1,000 pounds bomb load, was a precision instrument. On the other hand, the fighter-bomber, which was restricted to comparatively shallow diving attacks and small bomb load, was not in the same category; but it had the merit of delivering some bombs and suffering small casualties at a time when Stuka attacks were suicidal to themselves.

In view of the fact that in the Allied Air Forces the fighter-bomber is now looked upon as our improvement upon and development of the dive-bomber, it is curious to note that the Germans never looked upon their bomb-carrying Messerschmitts as successors to the Stukas. Rather they were the expression of a blind determination to bomb London by any means possible. Consequently they carried on with their tremendous production of Stukas and now find themselves saddled with these "white elephants" which compose a large proportion of their tactical bomber force in the field.

Politicians in England and the United States, impressed by tales of Stuka attacks in Poland and France, clamored for the inclusion of this weapon in the Allied armory. Their enthusiasm, however, was based on a misunderstanding of the real value of this airplane. The Stuka, with its vertical dive to low level, its screaming bombs and its unchallenged position in Air, had proved itself a deadly weapon against troops lacking adequate antiaircraft and fighter protection and untrained in passive air defense. By its very nature it could never justify its existence under the opposite circumstances. It was

slow, vulnerable, and at the mercy of any fighter which could get near it. To make its attack it had to break formation, and lose what little supporting fire power it could get from the rest of the formation. It had to go into a long dive which made the task of its escorting fighters almost impossible. It came into range of automatic weapons on the ground if the dive was held long enough to achieve accurate bombing. Finally the sight of Stukas crashing to the ground more than cancelled the morale effect of the bombing on well-trained ground troops, who in many cases were reluctant to take cover in their eagerness to watch the show.

Although Allied Naval Staffs saw a case for shipborne dive-bombers, the Royal Air Force and the U.S. Air Force Staffs were unimpressed. In 1941, the British were using the Blenheim—a twin-engine light bomber—for tactical bombing operations in Libya and against targets in France. They flew in formation and were effectively escorted; yet they suffered from considerable limitations and handicaps which convinced the staffs that some airplane was necessary which could do the job of the dive-bomber without suffering the same rate of casualties.

If the Benheims were to be protected by their escorting fighters, they had to remain in close formation, thereby reducing the width of front which had to be defended; but this close formation was particularly vulnerable to antiaircraft fire. Consequently the approach to the target and the bombing run had to be made at a minimum altitude of 8,000 feet. At this altitude it is not easy to spot or identify a typical "close-support target." If the first run-up fails to reveal the target to the leading bombardier it is generally a wasted mission. Such a formation cannot fly about, searching for its target, without disorganizing its escort—the event which all the Axis fighters in the sky are waiting for. A large formation simply does not possess that flexibility which permits large deviations in the flight plan when in the air and in the face of fighter opposition.

A further disadvantage of the escorted light bomber is the time required to brief the crews of multi-place aircraft and for the formation to take off, assemble, and rendezvous with their escort; this is invariably much longer than that required by a comparable force of fighters. When the mission is in response to an urgent call for help it is obvious that such a time-lag may be an important battle-losing factor.

Those considerations have limited the effective-

ness of the formation-flying, escorted, tactical bomber to circumstances where

a. The target can be seen, identified, and hit from 8,000 feet and above.

b. The mission can be carefully planned and the tactics agreed upon between the leaders of the bomber and escort formations.

c. There is no urgency involved.

Evidently some form of airplane was needed which could get over these disadvantages and combine the ability to stay in the target area, while searching for a target, with sufficient firepower or bomb load effectively to attack the target when found. It must not have to rely on escorting fighters for its protection, it must in fact be self-protecting; the only type of airplane which filled the bill seemed to be the fighter—with the heaviest practicable bomb or bombs.

Experiments proved that a load of 500 pounds in bomb weight had little effect on the flying characteristics of most fighters and that, when the bomb had been dropped, the external bomb racks reduced the speed by less than five miles per hour. More difficult was the problem of aiming the bomb. To fit diving flaps would entail a change in design and would decrease normal performance, yet only by using such a device could a steep dive be maintained near the ground if the airplane were to pull out before hitting it. Consequently it was agreed to dive at an angle of some 45 degrees and to aim with the gunsight, using judgment and guesswork to allow for wind, target movement, and the ballistical properties of the bomb. The bomb was to be released, in general, above 4,000 feet so as to avoid the worst of the enemy's 20-mm antiaircraft fire.

Such a bombing technique is as unscientific as can be, yet it bears a resemblance to throwing a ball and can achieve a high standard of accuracy—with practice. The first bomb the writer ever dropped was in action and resulted in a direct miss by about 1,500 yards. The bomb incidentally hit quite a different target from the one aimed at and blew up a gasoline dump. Succeeding attacks showed a marked improvement in aim if not in effect.

For the "Crusader" campaign in Libya in November 1941, a squadron of Hurricanes was fitted up with bomb racks to carry small bombs. The intention was that these bombs should supplement their machine-gun fire in low-level attacks against motor transport. The results were excellent but it was soon realized that the low-level attack could only be used in exceptional cases—on one occasion every aircraft in the squadron landed "Category III" (needing 3rd echelon maintenance) as a result of 20-mm ground fire.

It was decided to fit heavier bombs—both 250 pound and 500 pound—and to bomb in a dive from more altitude, not only motor transport but tanks,

guns, and all the other targets inherited from the Stuka. In April 1942 the first Kittyhawk (P-40) squadron became a Kittybomber outfit.

The success of the Kittybombers—eleven squadrons of which took part in the Alamein battle—is reflected in the fact that fighter-bombers are now the basic ground attack aircraft of the Allied Tactical Air Divisions. It is they who will give the close support involved in day-to-day planning at army level while the light and medium bombers are held at a higher echelon of command and are used in longer range planning. The Typhoon and the P-51, with their great speed and considerable bomb load, are already proving over northern Europe that they are as effective as they are economical in casualties.

In the fighter-bomber the Air Commander has a very fine weapon from all the Staff Officers' points of view. It is operationally flexible and achieves its results with great economy of force. When one squadron, with one ground and air echelon, can alternate the roles of interceptor (or escort) fighters and attack bombers, when one supply channel can serve reconnaissance and defense, then in a theater at the end of a very long line of supply—such as the Western Desert in North Africa—each squadron is operating at two or three hundred percent efficiency.

One of the standard ways of employing fighter-bombers in the Western Desert was on what was called "armed reconnaissance." It had been found that constant attacks on enemy ground units had made ordinary fighter pilots into keen and reliable reconnaissance pilots. The amount of information brought back by fighter squadrons from sweeps over the line was considerable and formed an essential supplement of the routine reconnaissance of the Tac R (Tactical Reconnaissance) Squadrons. For an armed reconnaissance the area would be divided up between the squadrons available, and one or two squadrons would be given a section of the front to a depth of thirty to forty miles. The squadron would fly in open fighter formation carrying bombs. This formation made two things possible: a comparatively low altitude, since it presented a poor target for heavy AA fire, and frequent changes in direction and altitude as the leader "hunted about" looking for information on the ground. The best target that was seen would be attacked at the discretion of the leader. If enemy fighters intercepted (as they often did) there were two courses open: either the whole formation would jettison its bombs and turn to fight or else the highest element only would jettison and contain the enemy's attack while the lower element continued with their attack or reconnaissance—whichever it might be.

This system of armed reconnaissance had some notable successes. Often a plain reconnaissance aircraft would bring back information of a badly dispersed column or concentration highly suitable for air attack, but by the time aircraft had been dis-



patched to the scene, the target would have dispersed. Under the new system that time-lag was eliminated. The ever-present threat of these roving squadrons—whose role could never be duplicated by light bombers or Stukas while any air opposition remained—made any departure from dispersed formation a nightmare to Axis ground commanders and greatly restricted their freedom of maneuver in addition to spreading out their AA defenses.

This power of formulating the ground attack plan in the air and of changing roles from bomber to fighter was what gave the Kittybomber its flexibility. On many occasions a force which had been dispatched to attack a specific target happened to be conveniently located when an enemy air attack developed. Since they were constantly under the direction of the fighter controller they could be diverted from their original mission to intercept the enemy raid. Eagerly jettisoning their bombs they would race into escorted formations of Stukas and prove once more the vulnerability of that much vaunted airplane.

Perhaps the best example of the flexibility and economy of force achieved by a fighter-bomber squadron is provided by an account of a single day's operations of the squadron which the writer commanded.

During the Battle of El Alamein orders were received one evening to make an armed reconnaissance at dawn the following morning. The squadron was ordered to cover the southern half of the line to a depth of twenty miles. At first light the squadron took off, reconnoitered the area, and attacked a target consisting of about forty trucks which were discovered packed together in a *wadi* about two miles behind the Axis front-line positions. After having refuelled and eaten breakfast, the squadron took off again to form part of the fighter escort to eighteen medium bombers which were to attack one of the German fighter airfields at Daba. Then during the afternoon, along with three other squadrons, a dive-bombing attack was made to coincide exactly with an assault by an infantry division on a German strongpoint. This was particularly successful and the bombing and strafing had such an inhibiting effect on the firepower of the German position that our infantry captured at small cost an objective which had repulsed an earlier assault unsupported by air attack. Even this did not close a busy day for late in the evening the squadron was "scrambled" to intercept a German Stuka raid on the British "bulge" in the north of the line; this resulted in the destruction of five Stukas and one fighter.

It will be realized that the fighter-bombers spent very little time unemployed and sitting on the ground. Contrast the Stukas who could only operate when they were given a target and when fighter escort in adequate strength was available.

It would not be honest to omit the limitations and drawbacks of the fighter-bomber. Briefly, these are relative lack of bombload, bombing accuracy, range, and navigational facilities. These factors are not overcome by the long-range, twin-engined fighter-bombers such as the Messerschmitt 410, the Mosquito (Special Series), and the P-38. The fighter-bomber, if it is to accomplish its mission as a close support aircraft, must be primarily a fighter. Unless it has this quality it cannot get anywhere as a bomber. Now these large twin-engined fighters just mentioned rely on speed and long range for their successes. It is their mission to range far out where they attack their victims who do not have single-engined fighter escort. In the European theater if they encounter such air escort they must run for it.

Consequently we must rely on the single-engined (S.E.) fighters carrying a bombload of about 1,000 pounds and with a radius of action of from 100 to 200 miles. (It must be remembered that bombs are usually an alternative to auxiliary gas tanks.) If this small weight of bombs is going to be effective, a large proportion of those dropped must hit the target. This means that, if the bombs are to be released above the effective level of the light AA, the target must be large, and that conversely, if the target is something small like a battery position where direct hits on the gun pits are called for, then the aircraft must dive very low to release their bombs, and risk casualties. In the first instance where the height of release is about 4,000 feet the *average* error in a well trained squadron is not likely to be less than a hundred yards even if the dive is made at seventy degrees. However, most of the error is along the line of flight—the lateral error being very small. In the second instance where the bombs are released below 1,000 feet the average error will vary between twenty-five and fifty yards. When the aircraft has committed itself to that level, however, it will usually employ its front guns to increase the effectiveness of its attack (e.g., against gun crews, etc.) and it may well be that the bomb will only have the effect of reducing the antiaircraft automatic weapons (A.A. A/W) fire while the fighter does his job of strafing. It must be stressed, however, that German ground formations can hardly ever be attacked from below 3,000 feet without heavy damage to the aircraft and that such attacks have consequently to be saved up for occasions when the results justify the cost in aircraft.

We may assume then that the most suitable target for the fighter-bomber is one where there are a number of individual targets spread over an area, each of which will be damaged or destroyed by a near miss. The most obvious examples are inadequately dispersed motor transport, troops, aircraft; against these targets the fighter-bomber can be and has been deadly. Where circumstances permit of low-level attacks, then guns, HQ vehicles, small bridges, etc.,

may be attacked. Tanks should be reserved for special tank-buster aircraft unless they are very closely parked, since nothing but a direct hit with a sizable bomb will put them out of action.

This then is our new weapon for delivering air support to our armies. The Germans, too, have at

last realized its powers and are using it to an increasing extent. Fighter-bomber pilots are enthusiasts who feel that they combine the jobs of all other combat pilots. Their morale is usually particularly high; we earnestly hope that our armies will find our efforts satisfactory when the big day comes.

## The British Fleet Air Arm in the U.S.A.

[From a British source.]

IN SOME respects the British Fleet Air Arm and the United States Naval Aviation have proved virtually interchangeable. An American aircraft carrier took part in the recent British attack on enemy traffic along the Norwegian coast, British carriers being at that time fully occupied in Mediterranean waters. Earlier in the year, H. M. aircraft carrier "Victorious" served for several months with the United States Pacific Fleet and took part in important operations in the Southwest Pacific. In Washington, there is a Fleet Air Arm section in the Bureau of Aeronautics of the Navy Department. It is staffed by British officers, but for all practical purposes is an integral part of the Bureau.

The most striking example of Anglo-American co-operation in naval air warfare is the training of Fleet Air Arm pilots. For good practical reasons, the majority of them are now trained in the United States. They arrive from the British Isles as seamen, after several months' training in naval procedure drill. First they receive preliminary flying training in a school of the United States Naval Aviation. They go then through several schools in another part of the country for other phases of their training. In these schools they are absorbed into the United States Naval Aviation and receive all their training from American instructors. The only difference between them and the Americans in the schools is uniform. Each school has a British naval officer to look after personal needs of the British trainees; apart from this, they are entirely under the orders of American officers.

After completing these courses, the cadets are sent to yet another station, where they are commissioned, placed under British officers, and formed into squadrons. Each squadron includes some pilots who have had operational experience; they are brought over to the United States to join the new formations.

The squadrons go through operational training together, with the airplanes they are going to use.

These airplanes are American-built. This training completed, the squadrons fly to the West Coast, where they are assigned to newly-built escort carriers. The carriers are built in the Kaiser shipyards to British specifications.

Recent expansion of the Fleet Air Arm will make it the largest branch of the Royal Navy. It is estimated that within six months forty percent of its pilots will have been trained in American Naval flying schools.

The Fleet Air Arm is one of the least known branches of the British armed forces. On an occasion like the Battle of Taranto it is impossible to keep it out of the limelight. Its achievements are too striking. On other occasions, the tradition of the "silent service" combines with the needs of security to keep the Fleet Air Arm out of the picture so far as the public is concerned. Publication of Fleet Air Arm activities might give the enemy a clue to the whereabouts of an aircraft carrier, which must be avoided at all costs. It is none the less known by now that the Fleet Air Arm has some remarkable achievements to its credit. It was the first air service to sink a warship by dive-bombing, which it did at Bergen in 1940, and the first air service to sink a battleship, as it did at Taranto in the same year. During the operations in North Africa last year, a submarine was sunk by a torpedo launched from an aircraft of the Fleet Air Arm. This was also a "first."

After the Norwegian campaign, the Admiralty broke its traditional reserve and signalled to the officers and men of the Fleet Air Arm: "We are proud of you." More recently, after the Fleet Air Arm had taken a distinguished part in the Salerno landings, the Admiral in command signalled to the aircraft carriers: "You have made history in the Fleet." Perhaps the best tribute, however, was paid by Admiral Somerville. He used to say that, if he went out without the "Ark Royal," he felt like a blind man without his dog.



# Preparation for Overseas Movement

LIEUTENANT COLONEL JOSEPH F. PROLA, *Infantry*

Instructor, Command and General Staff School

TO GET a true conception of preparing a unit for overseas movement, one must recognize the fact that the preparation begins on the day the unit is activated and is carried through in ever-increasing tempo until the day that unit is completely loaded aboard a transport on its way to an overseas station. All too often commanders and staff officers wait until they have received warning orders before starting their preparations, and in those instances, difficulty is experienced in attempting to complete the many sundry details incidental to the movement. If the preparation is started early, receipt of the warning orders means that the time has arrived to put into practice the lessons learned in training, and the actual movement is relatively simple. In order to assist all concerned, the War Department has consolidated instructions on this subject into a publication titled, "Preparation for Overseas Movement" (short title: POM), the second edition of which is dated 1 August 1943. Distribution is to be made to all activated units down to and including companies or similar organizations, and the War Department specifically directs that practical instruction in the provisions of the publication be given to all staffs, units, and organizations. Compliance with this directive will tend to eliminate the difficulties experienced by many of the units shipped overseas during the first year of the war.

Warning orders will normally contain a directive to complete training, and accordingly a certain amount of intensive training will be required during the period immediately following their receipt. It will be necessary to conduct range firing programs in order to certify that all men have fired their proper weapons and have satisfactorily completed the various prescribed courses. Training must be provided for the filler replacements. Completion of the proper standard of training is a prerequisite to consideration for movement overseas, and a unit will have reached that standard prior to receipt of warning orders. Administrative preparation becomes of increasing importance and a good portion of the period following receipt of warning orders until sailing day is devoted to completion of administrative details. Commanders and staff officers must recognize the importance of properly equipping the unit and must allocate sufficient time for accomplishing the tremendous administrative problem that is inherent to an overseas movement.

Further discussion will be divided into two categories—first, preparation at the home station, and second, final preparation while at the staging area or port of embarkation. Nothing is said about the move-

ment to the port since that phase differs in only minor respects from any movement between stations.

## PREPARATION AT THE HOME STATION

As soon as the orders are received, a staff conference should be called. In view of the detailed nature of the subject, it is believed that all commanders and staffs down to and including battalions should attend this meeting. A thorough study of the warning orders must be made prior to the conference, and as much information as possible should be disseminated to all concerned. The warning orders alert the unit for actual movement only when such action is specifically directed therein, so that only preliminary preparations can be started until such time as the actual movement order is received. A second conference should be called as soon as the movement order is received, and at that time a definite assignment of duties is in order. By making specific assignment of the various duties, full compliance with all of the many details will be insured, and all concerned will be held responsible for their respective assignments. A chart can be prepared listing the various duties and the dates by which they are to be accomplished. By having the responsible officer sign the chart upon completion of that detail, the commander will be able to know the progress being made at all times. If one unit is falling behind the pace being set by the others, prompt action can be taken to bring it in line, and in this manner a careful step-by-step process of preparation will result. The actual assignment of duties will vary in each command as directed by the commanding officer, but the necessity of having a definite plan worked out in advance to insure proper preparation is the same in all commands. Failure to have such a plan might mean overlooking one or more of the many details, thereby preventing the unit from completing its preparation on schedule.

Detailed instructions on preparation for overseas movement are contained in POM. Army regulations cover certain specific details of movement from home station to port, and regulations issued by the port commander set forth certain rules and regulations governing actions of units while at staging areas and ports, but there are certain administrative details in connection with the movement to a port of embarkation that must be decided by the commanding officer of the unit to be moved. The dates for holding inspections, the composition of the liaison parties, the housekeeping instructions governing the actual movement, the details of clearing from the home station, the composition of the trains, the decision on priorities of loading, and many other such details

should be decided upon as early as possible. Dissemination of these decisions to the command in the form of an administrative directive or memorandum should be given high priority so that the subordinate units can make their plans accordingly. The number of such directives or memorandums to be published will depend upon the situation, the amount of prior preparation completed, and the length of time between receipt of the movement order and date of departure. These directives should be brief, simple, and clear. The tendency is to repeat many of the items covered elsewhere, with the result that the directive is a long, wordy document requiring entirely too much time and study on the part of subordinate commanders. A reference to the proper publications will cover most situations, and will permit a saving in time that otherwise is spent in reading or studying duplications. The items in the directive will have added significance and will be more readily understood by all concerned. Above all, the directive must be clear and simple, since complicated phraseology will only tend to defeat the purpose for which it is issued. Frequent conferences and meetings will facilitate smooth functioning, and oral orders can be used in lieu of written orders to cover many of the minor details.

A high-ranking officer should be designated as liaison officer to act for the unit commander at the port of embarkation. This officer should be thoroughly familiar with the wishes and plans of the commander, and should be able to make decisions on the spot. In units the size of a division, this officer is often either the assistant division commander or possibly the chief of staff. Many questions will arise during the preparation, and a complete understanding is required between the port commander and the commander of the unit going overseas. The liaison officer should stay right at the port at all times unless the home station is near enough to permit travel back and forth. This liaison officer should not be confused with the advance party sent by the unit to the port later to assist in the handling of equipment, supplies, and personnel. The size and composition of these advance parties will be prescribed either in the movement order or in the call from the port commander.

Secrecy must be stressed immediately upon receipt of the movement orders. Security of the movement not only to the port of embarkation but also overseas is of primary importance. Even though the matter of secrecy in connection with troop movements has been given quite a bit of attention, experience shows that we have not as yet learned our lesson. Many instances have occurred to indicate that officers are even more guilty than enlisted men in this respect. Either carelessness or skepticism seems to be the main causes for these violations, and it is incumbent on each unit commander to counteract the natural tendency to forget about secrecy in every-day

conversations and actions. There are many good training films on this subject, and these should be supplemented by conferences conducted by unit intelligence officers. The intelligence officers should also disseminate additional information concerning writing and mailing of post cards and letters, sending of cables and telegrams, conduct while at the port, and instructions pertinent to the provisions of Section VIII, AR 380-5, "Safeguarding Military Information." All unit organizational designations must be completely obliterated before leaving the home station, and as POM definitely states, painting over the insignia is not effective. As soon as the secret code shipment number is received, extreme care must be taken to insure that the code number and the name of the unit are never used at the same time, either verbally or in writing.

It has been stated before that the preparation for overseas movement begins on the day the unit is activated, and this is particularly true with regard to personnel problems. Classification, assignment, reassignment, and clearing of personnel is a continuous command function. POM lists the type of personnel to be cleared and not to be cleared from units preparing for overseas movement. Every unit commander is anxious to clear unfit personnel after he has been notified that his unit is going into combat, but that same desire should have been manifest from the date of activation. The provisions of War Department Circular 293, 11 November 43, must be followed in clearing unfit personnel. AR 615-360, 1942, as amended, covers the inapt, low mentality, and chronic undesirable classifications, and individuals must be subject to action under the provisions of that regulation before they can be removed from the unit.

It is no longer possible literally to "unload" all misfits from a unit as overstrength, since present provisions require that the personnel transferred be a cross-section of the unit as a whole. That is, the list must necessarily include a proportionate share of each Army General Classification Test category.

Requisitions for replacements should include "known future losses," such as discharges, transfers, etc. Army Ground Force policy prescribes that a unit shall arrive at a staging area at Tables of Organization or Movement Order strength, although POM authorizes a deviation of two percent over or under strength.

Another personnel matter that requires attention on or shortly after activation day is the policy of leaves and furloughs. The tendency is to delay establishment of a well defined policy until warning orders are received. As a result, too many men are removed from training at critical times, and all those that have not had leaves or furloughs will be wanting them at the same time. No leaves or furloughs can be granted from the staging area, and if the men haven't had leaves or furloughs many are likely to take un-



## PREPARATION FOR OVERSEAS MOVEMENT

authorized time off for that purpose, with resultant bad effects on both the individual and the unit.

The movement order will designate the proper Tables of Basic Allowances or Tables of Equipment to be used, as well as any modifications from those tables. The movement order is the final authority, and strict adherence to its instructions in regard to equipment will insure a minimum of difficulty after reaching the staging area or port of embarkation. The first step in determining the completeness and combat serviceability of equipment, supplies, and clothing is to hold a complete, 100 percent show-down inspection. This inspection must be scheduled as soon as possible after a unit has been placed in A-4-a priority or better, since it is imperative that the station commander be notified at the earliest moment of the existing shortages. POM lists in detail the process by which a unit's shortages are filled, and a repetition here would be out of order, but it is well to bear in mind that the first show-down inspection will *not* disclose all of the shortages. Regardless of the schedule published, there will be some individuals absent at the time of the inspection. There will always be some sick, or on furlough, or absent without leave, or in the guardhouse, and extreme care must be exercised to insure that the inspection is completed for *all* personnel. Various methods are being used to account for those not present at the inspections, and any method that guarantees results is satisfactory. The only satisfactory method of holding a show-down inspection is to take the unit away from its barracks area. If a large athletic or drill field or similar area is available, it can be put to good use. Every man can display each and every item of clothing and equipment he has on hand. The various officers can rapidly check the items, listing in separate columns the shortages and those items that are unserviceable. Unserviceable items can further be sub-divided into those that can be repaired and those that are beyond repair. Those that can be promptly placed in combat serviceability will not be listed as short in making the showdown shortage report to the station commander.

In the early stages of overseas shipments, many units were taking along equipment and clothing that was definitely not fit for combat service with the result that shortly after they had reached the overseas destination requisitions had to be submitted to replace items that should never have been taken over in the first place. Resupply of a unit overseas is a much more difficult proposition than when it is still in this country, and when there is any doubt as to the remaining life of any item of equipment or clothing, it should be listed as unserviceable in order to get replacement prior to sailing. Standards of clothing serviceability are published in War Department Circular 277, 2 November 43, and of ordnance equipment in Ordnance Field Service Bulletin No. 4-17, 4 February 43.

The matter of defining combat serviceability to the satisfaction of all concerned must be given considerable thought, since there is not at the present time a clear-cut rule that applies. It is a matter of individual opinion as to whether or not an item is unserviceable, and an item that is considered serviceable by the station commander may be classed as unserviceable by the port commander. While at the home station, the serviceability of any particular item is decided by the station commander. The commander of the unit being ordered overseas is naturally going to attempt to have the station commander establish a high standard of combat serviceability. There must be a common meeting of minds in order to avoid many time-consuming discussions during the preparation phase. It is difficult to set any given length of time as an estimate for the remaining life of any item, such as one, three, or six months, since conditions under which the various items of equipment and clothing are to be used will influence the serviceability. A suit of herringbone-twill might last a doughboy six months and be completely unserviceable for the driver of a tank within two months. The same is true of nearly every item of clothing and many of the items of equipment.

Exchange of unserviceable clothing while at the home station can continue until such time as the movement order is received. After that time, normal supply functions cease, and close coordination is required in order to avoid much waste and inefficiency. POM authorizes a unit to retain certain unserviceable clothing—that is, unserviceable for combat—for use while at the home station, over and above authorized amounts. It is obvious that this clothing cannot be turned in as salvage and exchanged for new issue, and still that is exactly what has happened in some instances. One unit showed shortages of a particular item as a result of its showdown inspection and the following day turned in overages of the same item.

The show-down inspection must be accurate and thorough. This permits the station supply officer to make his requisitions for the proper amounts and avoids many last-minute shortages. There should rarely be any items of clothing appearing on the Initial or Supplemental Lists of Shortages, since those items are usually readily available for issue. Improper or inaccurate inspections which fail to show proper shortages have caused considerable difficulty in the past, in that proper advance plans could not be made by the station supply officer to provide for contemplated shortages.

Proper packing of impedimenta for shipment overseas will eliminate many inconveniences and delays and will insure availability at the overseas destination. Service Commands have an inspection squad organized specifically to assist in packing and marking organizational impedimenta, and in the application of preventive maintenance to organizational

impedimenta taken overseas. The services of that squad are very beneficial and should be used by all units. As stated before, the movement order will state any deviations that are to be made from Tables of Basic Allowances or Tables of Equipment, and as soon as that order is received, previously prepared crates and boxes must be assembled for all impedimenta that is to be taken. Needless to say, the crates must be of sturdy construction, since the distance and handling will place a considerable strain on them.

POM clearly sets forth the method of marking organizational impedimenta and personal baggage. Proper marking will facilitate distribution both at the port of embarkation and debarkation. This is particularly important when the move is made to ports being used by many other units, since the amount of equipment piled up around a warehouse or near the docks reaches large proportions. Failure to comply with the provisions of POM in regard to marking might mean that the unit will be without equipment upon arrival at its destination.

There are certain details that must be taken care of before leaving the home station. Post, camp, or station property in possession of the unit must be turned in, buildings and grounds policed, company fund property disposed of, general purpose vehicles turned in unless otherwise directed by the movement order, and other similar details. Coordination with the station personnel will result in establishing schedules and dates satisfactory both to the station and to the unit. Inspection of vehicles to be turned in and the dates for turning them in must be decided. They should be turned in early, on paper at least—that is, all the paper transfers should be accomplished early. Memorandum receipts can then be executed to cover those vehicles that are needed right down to the last day.

#### FINAL PREPARATION AT THE STAGING AREA

The amount of preparation necessary at the staging area will depend on the amount accomplished at the home station. There has been a very noticeable improvement in that respect during the past six or eight months, and units are now reaching the staging areas with most of their preparation behind them. Unfortunately, that is not true of all units. Even though instructions are quite explicit, many still cling to the belief that they can wait until they arrive at the staging area before getting down to serious work. The time at the staging area is short, and is completely filled with necessary last minute changes, inspections, clearances, and so forth. The staging area is not equipped to provide anything other than minor shortages of clothing, and every unit should reach the staging area either 100 percent equipped, or at least with all shortages previously reported and due at the port of embarkation.

Each port has its own regulations to be followed by units staged through that port, but differences in

those regulations are minor. It might be well to bring out at this point that command passes to the port commander as soon as the unit reaches the port area, which includes the staging area. Port regulations are sent to the unit at the same time or shortly after the movement order is sent out. These regulations set down the procedure to be followed while at the staging area and the port proper. All activity is under the supervision of the port commander, including inspections, training, loading, and movement from the staging area to the port. A physical inspection is required while at the port, and emphasis is placed on the fact that it is merely an inspection and not an examination. A final show-down inspection of all equipment, clothing, and supplies on hand with the unit is held at the staging area, and any shortages that develop are filled from stocks maintained by the port supply officer. Limited physical conditioning is carried on under the supervision of the training section of the port. Schedules are published covering the movement from the staging area to the port. Last minute losses in personnel are replaced from the filler pool.

Secrecy while at the staging area must be emphasized. Relatives are not permitted to accompany any of the personnel to the port area, and absolutely no visiting is permitted. Intelligence officers must instruct all personnel regarding use of communications of all types. Regardless of how well prepared a unit may be upon reaching the staging area, there will always be some last minute changes. Some will get sick, others fail to pass the physical inspection, possibly some will desert, presenting minor problems that will consume any spare time that may be available. There must be an accurate check made of all service records to insure that there are no extra records for men not present, or vice versa. In order to facilitate loading, parties are sent ahead to become familiar with the transport to be used. Signs are also used to help place the men in their proper compartments. Once aboard, no men should be allowed to disembark, except for those few that are assisting in the loading. The entire loading is under the supervision of the port authorities, and any assistance to be rendered by the unit going overseas should be only as directed by them.

Some time prior to moving to the staging area, the port will call for advance parties to be sent from the unit to the port. These are particularly necessary in the event that much of the equipment is due to arrive from the various service branches directly at the port. The composition of the advance party will vary in each case, but it must be large enough to handle the many details. An accurate record must be maintained so that all concerned will know at all times exactly the status of equipment and supplies on hand as well as due. In some instances, units are turning in all equipment except "minimum essential equipment" as defined in POM, and receiving en-



tirely new equipment upon reaching their overseas destination. Advance parties in these cases are being sent to the overseas destination instead of remaining at the port. They keep running inventories of equipment and supplies being received, and are able to give the status at any given time.

At the Command and General Staff School, the letters RTP are used quite frequently to indicate that the student has failed to "read the problem." Any unit which is alerted for overseas movement will experience little or no difficulty if it has carried out the instructions as contained in POM and Port Regulations—in other words, if it has "read the problem." Most of the units arriving at ports unprepared have overlooked or neglected certain instructions. It is necessary that as much as possible

be accomplished at the home station. It is incorrect to expect to be able to perform most of the details of preparation while at the staging area. The average length of time spent in the staging area is not too short if proper preparation has been completed prior to that time, but it is never long enough if a unit has failed to comply with the instructions issued.

The task of getting properly equipped and prepared for movement overseas must have priority over any other activities after receipt of the warning orders. A unit that is not properly equipped cannot perform its task regardless of how well it is trained, and all efforts should be centered on completing equipment and personnel requirements prior to the date set for leaving the home station.

## Combat Driving Course

TRUCK drivers at the Eastern Signal Corps Unit Training Center are now going to the field steeled against the shock of initial contact with the enemy by the experience of piloting their vehicles through rugged terrain obstacles under simulated combat conditions.

Much of the combat driving course is a heavily wooded area which was untouched terrain before the Motor Vehicle Division, Plans and Training Section, laid out the narrow, winding road.

The situation is set up as a tactical problem and explained to the student drivers as follows:

Lieutenant X, in charge of the supply convoy proceeding from corps to division, discovers that the route makes it necessary to cross a field that is being shelled by indirect fire of light German artillery. He assembles his drivers and tells them that the convoy will cross the field, one vehicle at a time, at intervals of twenty minutes. The point of dispersal is indicated to the drivers on the lieutenant's map. Leaving Sergeant Y in charge of the convoy for the purpose of dispatching, he proceeds with the lead vehicles across the field under "shellfire." (One-pound nitro-starch charges, detonated automatically by trip wires, shower dirt and debris upon the truck.)

At the assembly point on the far side of the field, Lieutenant X descends a forty-five percent slope, reconnoiters the route, and finds that a stream must be forded. The far bank of the stream, however, is too steep and slippery to be negotiated by normal means, so he constructs an "A" frame which is attached to each truck winch and overcomes the obstacle. During this operation, enemy "mortar fire"

upon the water throws a curtain of spray upon the men. (Two one-pound nitro-starch blocks, planted in stream, detonated by remote control.)

Further reconnaissance discloses that soft ground and steep grades are ahead and only careful driving and the use of assistant drivers will make the area passable. Successive vehicles are warned. Soft spots are covered with chicken-wire, gravel, and brush; deep ruts are filled with branches (work done on the spot); a six-foot culvert of logs is crossed and a corduroy road, twenty feet in length, is carefully negotiated (permanent installations).

A thirty-five percent grade is encountered, and the lieutenant finds it necessary to use a "dead man" and winch operation to climb the slippery slope ("dead man" permanently installed). Still separated by twenty minute intervals, the trucks complete the run by following a winding dirt road, while aerial bombs burst overhead and resound across the entire area of the course (aerial salutes, five seconds delay, three inches).

It requires approximately an hour to send a truck across the combat course. Five cadre men set and control the charges. Each of these men has received thorough instruction and practice in his particular job and the necessary safety measures.

One driver remarked upon completing the run, "After the first few explosions, you figure you can't tell where the next one's coming from, so you steady your nerves, shoot straight ahead and hope for the best." That about sums up the attitude instilled in all men by the combat driving course.

(From *Signal Corps Technical Information Letter*, No. 22.)

# "You Take the High Road"

MAJOR AMOS D. MOSCRIP, JR., *Infantry*  
Instructor, Command and General Staff School

*"We learned that to live we must take to the ridges and advance along them, avoiding the 'natural avenues of approach' up the valleys."*

—9th Infantry Division, U.S.A.

THE ADVICE of Robert Burns' "Loch Lomond" notwithstanding, some of the developments of the Tunisian and Sicilian campaigns seemingly point out that in order to get to "Scotland" at all, it is necessary to take the "high road."

For years in our map exercises and maneuvers we have generally followed the "low road" in the belief that this would get us there first. Actual events in these two campaigns against the Germans prove that this is not an inexorable rule.

Our field manuals tell us that in general a corridor favors the attack because it limits the lateral organization of the defender's fire and therefore we should utilize corridors wherever they exist.<sup>1</sup> Perhaps some of us have been unimaginative in taking what is obviously a guide and endeavoring to apply it to all specific instances without first determining whether the "rule of thumb" or guide was intended so to apply. For example, much of the terrain in Tunisia and Sicily was mountainous. Consequently, rules we have developed for what might be called ordinary terrain could not conceivably apply to all of northern Tunisia. The Field Service Regulations in the section on "Mountain Operations" tell us that in mountain operations each tactical group, within its terrain compartment, "makes its *main effort* along the crests and slopes or by a combined advance along the heights and valleys."<sup>2</sup> It continues by saying: "It is particularly important that early possession of the heights on each side of the defile assure protection to troops operating within the defile."

In addition to stressing the necessity of "staying on the high ground," as a result of combat experience, the reports of our combat divisions on their engagements in North Africa also stress the absolute necessity of seizing the "dominant observation" in an area. We have taught this principle for years. Our field manuals are very specific in regard to it. The Field Artillery field manual on "Tactics and Technique"<sup>3</sup> states that "commanding elevations form the framework of the systems of observation, command, and fire control in combat." The necessity of seizing dominant observation by advance guards is also brought out in our Field Service Regulations.<sup>4</sup> In the Tunisian operation this necessity

was also highlighted by the nature of the terrain. There the road net was inadequate for a motorized and mechanized army. In such terrain "the military value of existing roads adds importance to heights which dominate them, and slows down the operations."<sup>5</sup>

We have, then, two situations brought into relief by actual combat experiences. On the one hand we have a guide we cannot always follow, and on the other hand we have a general rule we do not always follow.

In the first place, as pointed out, the "natural avenue of approach" dictum is not a principle but is rather a guide. Obviously it would not apply if the so-called "natural avenue" were denied to us. Nor would it apply in mountainous terrain unless we held the crests and the dominant observation. The difficulty, if there be any, may be caused by the impossibility of injecting that note of realism into classroom exercises and field maneuvers which would normally result in the mixing of common sense, "rules of thumb," and basic principles in the proper proportion. With constant repetition, rules of thumb sometimes assume the magnitude of "principles." In endeavoring to apply rules of general application to all specific instances, we lose our flexibility of thought. We forget that there is no formula for success in battle.

In addition to the confusing of "rules of thumb" and "principles" and the failure to use common sense at times, there is another aspect to be considered.

The land mine has assumed the proportion of a weapon. As weapons change, so do our tactics. Further, the Germans are familiar with the "natural avenue of approach" dictum. In all mountainous and hilly terrain they have taken full advantage of it. In both Tunisia and Sicily they have skilfully employed their antitank guns and have heavily mined and strongly defended the heads of valleys, making our advance along them almost certain to end in disastrous defeat.

The rule we do not always follow is the seizing of the dominant observation. Possibly this too may be attributed to our inability to portray actual combat conditions in a field maneuver. From the staff viewpoint it might be said that we have not sufficiently stressed the importance of "key" terrain features as distinguished from "observation." In map exercises there has sometimes been a reliance on theoretical ability to "turn" an enemy out of his position, without regard to whether the enemy occupied a so-

<sup>1</sup> FM 101-5 (SOFM) App II; Par 6.

<sup>2</sup> FM 100-5 (FSR-OPNS), Par 920.

<sup>3</sup> FM 6-20, Par 151.

<sup>4</sup> FM 100-5 (FSR-OPNS), Par 515.

<sup>5</sup> FM 100-5 (FSR-OPNS), Par 895.

called "key" feature. The 9th Infantry Division tells us that as long as the key feature is in enemy hands, it is impossible to advance. Academic though it may seem, there may be a difference between terrain affording good observation and a "key" feature; the "key" feature, insofar as heights are concerned, being the commanding observation in an area.

In preparing for anything, it is well to profit by the experiences of others. The combat divisions which have been in action have learned the lesson in what has been the "hard way." We may all profit by their reports on combat experience and battle lessons.

One such report is that of the 9th Infantry Division on the operations in North Africa. This campaign was divided into the Southern and Northern Phases. It would be untrue and unfair to claim that mistakes were not made, particularly in the early phases when there were the necessary readjustments between maneuver training and combat. However, the errors which were committed during this adjustment period were never again repeated.

The two points we have discussed are illustrated by the following examples.

#### EL GUETTAR

In this operation in southern Tunisia the II Corps was directed to use the 9th and the 1st Infantry Divisions for an attack on the Gafsa-Gabes axis with a view to opening the pass north of Hill 369 to permit passage of the 1st Armored Division, and for these two divisions to seize subsequently an objective east of the pass.

The pass the two divisions were to open was approximately ten miles southeast of El Guettar. The

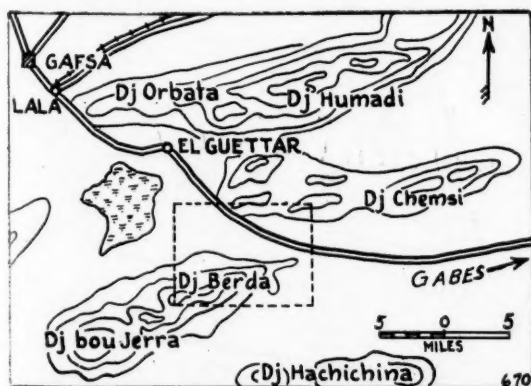


FIGURE 1.

THE AREA WITHIN THE DOTTED LINES IS SHOWN IN GREATER DETAIL IN FIGURE 2.

9th Division was given the zone south of the Gafsa-Gabes road (see Figure 1). The dominating terrain mass in this area is Djebel Berda and adjacent hills. Of this mass, the dominating peak is Hill 772 (see Figure 2). Other heights of importance are Draa Saada el Hamra extending northeast from Hill 772 and terminating on Hill 290; Djebel Lettouchi, which terminates at its southern extremity on Hill

361, and Djebel el Kreroua, which terminates at its eastern extremity on Hill 369.

The 9th Division Engineer, in his Terrain Study, stated that a direct assault against the northwestern faces of Draa Saada el Hamra (including Hill 290) or Djebel el Kreroua (including Hill 369) would result in costly failure because of the necessity of approaching across the open plain and valley.

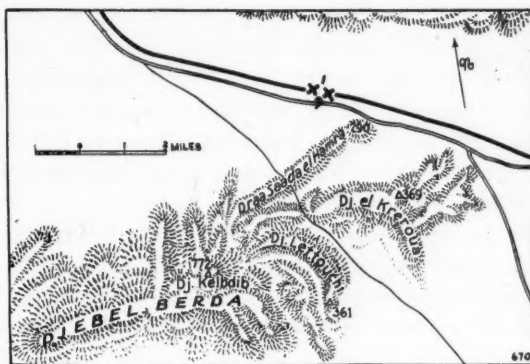


FIGURE 2.

He further stated that "each of these ridges, together with Djebel Lettouchi, should be attacked by first gaining a foothold on their westernmost extremities, and then progressing along their summits. Furthermore the attack on all these ridges must be made simultaneously, since they are all mutually supporting." He then cautioned that "before such an operation is begun, however, *Hill 772 must be in the hands of the attacker, since this height controls all the observation in the area.*" (Italics ours.)

In conclusion, the Engineer states that "the sequence of advance should be, therefore, (1) the capture of Hill 772 and (2) a simultaneous attack along the crests of Draa Saada el Hamra, Djebel el Kreroua, and Djebel Lettouchi, with the object of capturing Hills 290, 369, and 361."

In the attack order, the objective of the 9th Division was Hill 369. To avoid a frontal attack in the open terrain, the plan called for assembly at the western base of Djebel Berda. The "X" Infantry was then to move to the east along the northern base of Djebel Berda and capture Hill 369 from the west. The enemy had observation of the open and featureless plain to the north. One battalion was to advance on El Kreroua, and one along Djebel Lettouchi. A third battalion was to follow the left assault battalion in regimental reserve. The 1st Battalion of the "Y" Infantry was to follow the assault regiment by bounds and was to be committed only on division order. The balance of the "Y" Infantry was to be in division reserve. The division artillery was augmented by an artillery regiment, less one battalion, and was to support the attack beginning at 0600 on 28 March.

The attack began at daylight, which was about 0600, on the 28th of March, both divisions attack-



ing at the same time in their respective zones. The assault regiment of the 9th Division, using two battalions, seized El Hamra (but not Hill 290) on the first day. Plans were also made this first day to motorize one battalion of another regiment and have it assault Hill 369 from the north, under the cover of darkness that night. This battalion was to be assisted at daylight by the two battalions already on El Hamra. This battalion set out as planned along the Gafsa-Gabes road, but was driven back by fire from Hill 290 and was compelled to return to its original position without ever having detrucked.

On 30 March Hill 290 was captured and plans were then made for another battalion to envelop from the south around the right flank of the battalions on the El Hamra position to seize Hill 369.

No progress was made on the 31st of March, but on 1 April one battalion of infantry not previously engaged endeavored unsuccessfully to capture Hill 772. This was the first day that this hill was assaulted.

On 5 April, after nearly continuous efforts to seize the original objective, the division had one battalion on Hill 290; two battalions on El Hamra; one battalion on the northwestern ridge of Djebel Lettouchi;

and one battalion on the western slopes of Hill 772.

Hill 772 was occupied on 6 April, and as a consequence the Germans began evacuating Djebel Berda.

On 7 April the two regiments of the division made an almost unopposed advance and occupied the division objective along the road east of Hill 369.

A total of ten days was required to accomplish the mission of opening the pass north of Hill 369. It required eight days to seize Hill 772. This hill was the "key" to the entire position, but its capture was not attempted until four days of battle had passed. The objective of the division had been Hill 369, and not Hill 772.

The Engineer of the II Corps made a study of Hills 290 and 369 after the action had terminated. In this study it is clearly brought out that the Germans had used the terrain to the best possible advantage, with an all-around defense organized in depth. A majority of the installations were in well defiladed positions, many of them dug out of solid rock. The draws and "natural avenues of approach" were well protected by wire, mines, and machine-gun fire.

The 9th Division stated that as a result of the action the following lessons were learned:

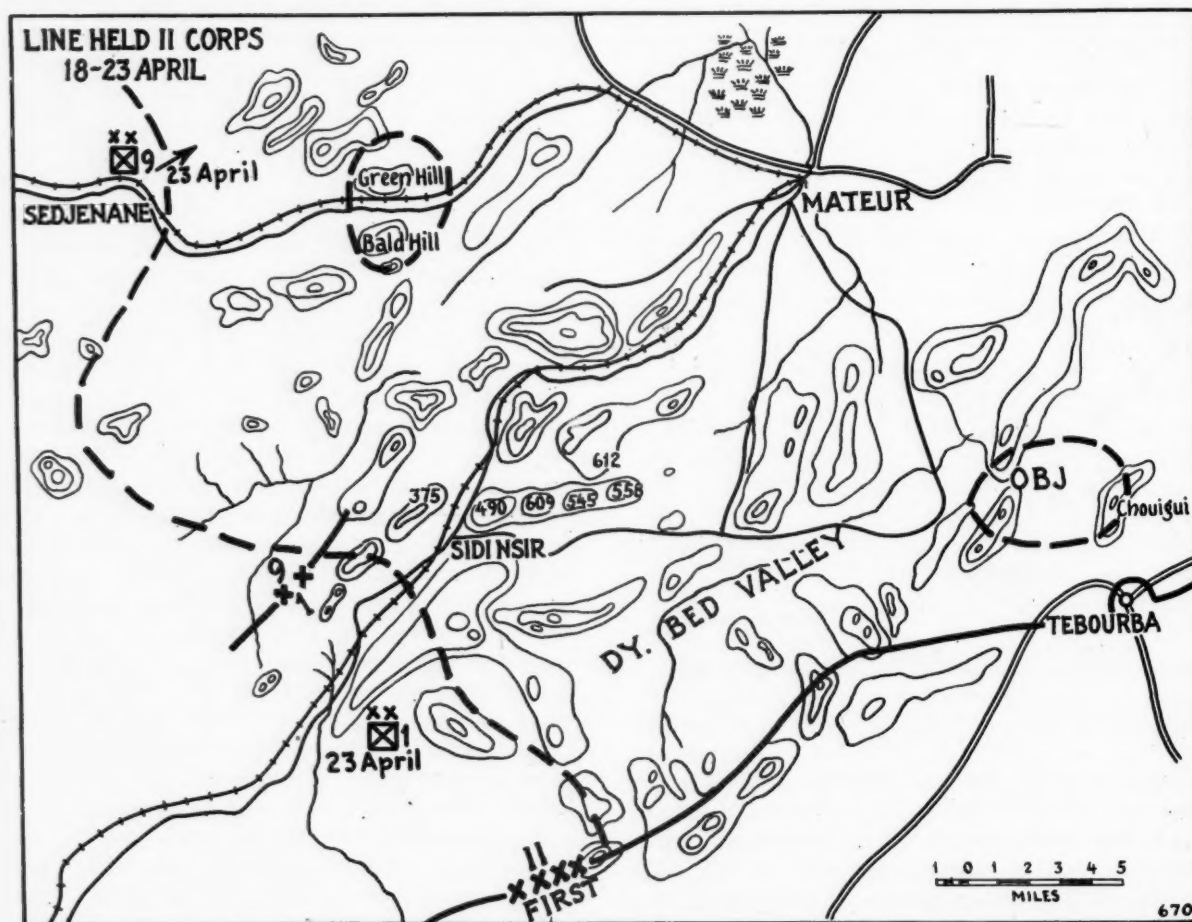


FIGURE 3.

SITUATION AS OF 23 APRIL, SHOWING THE BOUNDARY BETWEEN THE 1ST AND 9TH INFANTRY DIVISIONS, THE OBJECTIVES OF EACH, AND THE "NATURAL AVENUE OF APPROACH," THE DY. BED VALLEY.

# "YOU TAKE THE HIGH ROAD"

"Early seizure of the dominating observation is an essential prerequisite for a successful advance. As long as such observation remains in the hands of the enemy, further progress is impossible. An examination of the area over which this battle was fought will at once indicate the dominating characteristics of Hill 772, which was undoubtedly the key to the position. Although small detachments of the division, including artillery observers, occupied this hill early in the battle, they did not maintain their positions there and the significance of the hill was not realized until later. This hill is the focus from which radiates three subordinate hog-back ridges, namely Djebel Lettouchi, Djebel el Kroua, and Draa Saade el Hamra, all of which lead more or less directly towards Hills 369 and 290. *Had the initial attack been planned to capture Hill 772 and then to work generally east along the connecting ridges toward Hill 369 it is possible that the positions might have been captured despite the handicaps under which the division was laboring.*" (Italics ours.) The "handicaps" just mentioned were the detachment of one infantry regiment prior to the action and the lack of time for adequate reconnaissance.

The lessons learned by our 9th Division and other units of the II Corps in southern Tunisia were well

learned indeed. Their application may be seen in the next operation in northern Tunisia.

In the Report of Operations, Headquarters, II Corps, dated 15 May 1943, the following is stated as the plan of attack of the corps for the operation in northern Tunisia (see Figure 3): "II Corps was ordered to make its main effort on the right . . . There was considerable temptation to attack up the Dr. [Dy.] Bed Valley, but inasmuch as all intelligence reports indicated that the position was heavily mined, well organized for defense, and therefore constituted somewhat of a deathtrap, the 1st Inf Div was ordered to attack north and south of this valley with its main effort on the north side to secure the dominating terrain east of Sidi Nsir. Likewise, in the northern sector, the 9th Inf Div was ordered to contain the Jefna (Bald Hill—Green Hill) position and outflank it from the north."

An examination of Figure 3 will indicate the "natural avenues of approach," or the Dy. Bed Valley.

## HILL 609 AND THE OCCUPATION OF MATEUR

The attack of the corps began on the 23rd of April with two divisions—the 1st and 9th Infantry Divisions. The balance of the corps was still as-

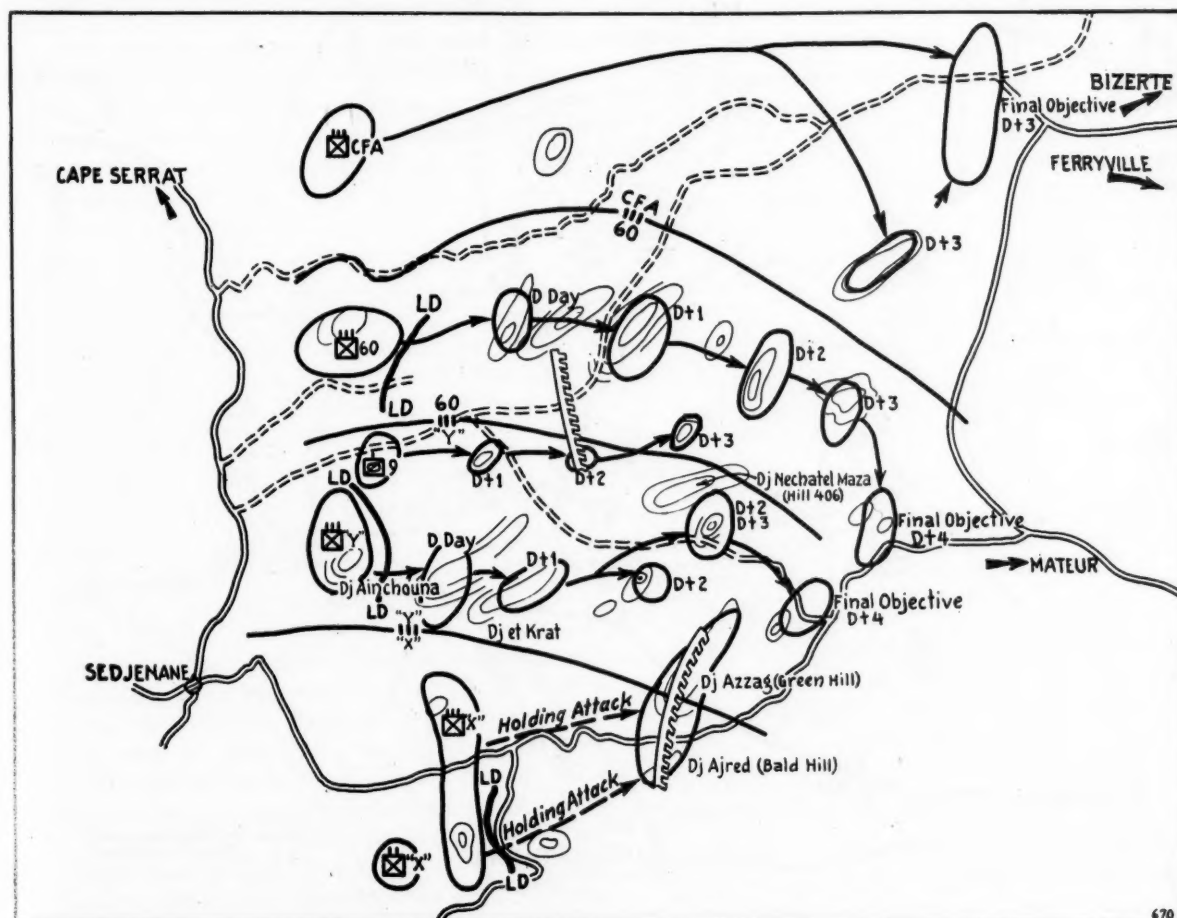


FIGURE 4.  
PLAN OF ATTACK OF THE 9TH INFANTRY DIVISION.

sembling. On 26 April the zone to the south of the Dy. Bed Valley was turned over to the 1st Armored Division. Previously, on 24 April, the 168th Infantry of the 34th Infantry Division had taken over the left of the 1st Infantry Division, the balance of the 34th Division arriving thereafter. Advancing laboriously from hill to hill, and along the ridges, the II Corps slowly turned the enemy out of its positions. On 30 April the 34th Division captured the northern slopes of Hill 609. Complete control of this hill was gained on 1 May.

By 3 May this capture of Hill 609 and other dominating terrain in the vicinity of Sidi Nsir had forced the enemy to make a general withdrawal in front of the 1st and 34th Infantry Divisions. The 6th Armored Infantry of the 1st Armored Division on the south of the Dy. Bed Valley was relieved by the 34th Division and the 1st Armored Division was ordered to move through the "natural avenue of approach," the Dy. Bed Valley, and occupy Mateur.

This mission was well and quickly accomplished, and resulted in the fall of Mateur.

#### JEFNA POSITION (SEDJENANE SECTOR)

While the main body of the II Corps had been thus engaged, the 9th Division had been on the north with the mission of containing the Jefna (Bald Hill—Green Hill) position and outflanking it from the north. (Note: Green Hill is Djebel Azzag. Bald Hill is Djebel Ajred).

In preparation for the attack, the division made a meticulous study of the terrain and selected dominating observation for each of the intermediate objectives to be captured by each regiment each day.

The attack was launched at 0530 on 23 April. The planned scheme of maneuver is as shown in Figure 4. The combat organization of the division consisted principally of the "Y" Infantry, "X" Infantry, 60th Infantry, and *Corps Franc d'Afrique* (CFA). Note the planned advance from hill to hill, avoiding all

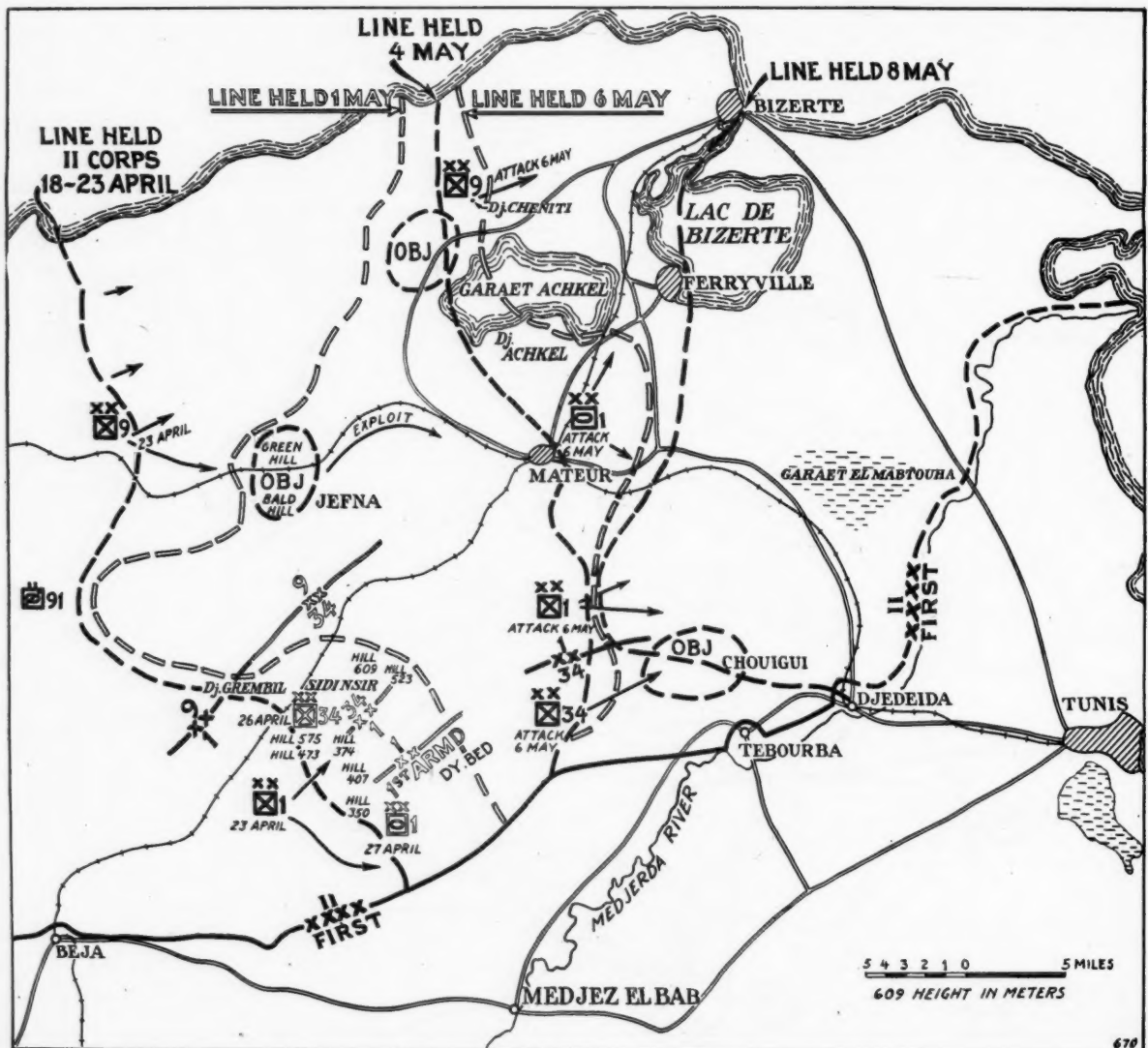


FIGURE 5.  
OPERATIONS OF THE II CORPS IN THE NORTHERN TUNISIA CAMPAIGN.



"natural avenues of approach." It was impossible, however, to follow this plan to the letter. Some few changes were necessarily made as the action progressed.

On 26 April, for example, it became necessary to change the direction of advance of the 60th Infantry to the northeast, to assist the *Corps Franc* (CFA) which was on the north. On 30 April the "Y" Infantry captured Hill 406. This hill was the "dominant observation" in the area. From this position it was possible to shell effectively the supply dumps and other installations which the Germans had used for the support of the Green Hill—Bald Hill position. The main German defenses were thus outflanked and the next day the German withdrawal to the northeast began.

On 1 May the II Corps ordered the suspension of all further offensive action pending the regrouping of the remainder of the corps front. The offensive was resumed the next day. On 4 May the "X" Infantry was moved to the north flank of the division to assist the *Corps Franc*, which had found the enemy in strength on Djebel Cheniti, the last key terrain feature in the path of the advance to Bizerte (see Figure 5). The "X" Infantry advanced north of this hill, and by outflanking it, its capture was made possible. This was accomplished on 7 May by the 1st Battalion of the 60th Infantry which had relieved the *Corps Franc* west of this hill (Djebel Cheniti) on the night of 5-6 May. Its capture caused the enemy withdrawal in this part of the area and permitted the division to replace a destroyed bridge and then advance to Bizerte. Advance elements of the division entered the city on that same afternoon.

These experiences of the II Corps and its units clearly bring out the advisability of seizing the "dominant" or "key" terrain features in an area and the probable necessity of advancing along the ridges in many situations until such time as the "key" features are in our hands and we have complete control of the corridors.

While this "discovery" was made in North Africa, it is not new either to us or the British. Some years ago Brevet Lieutenant Colonel Pakenham-Walsh of the British Royal Engineers brought out these same points in *Elementary Tactics* in the chapter on "Warfare in Semi-Civilized Countries."<sup>6</sup> Colonel Pakenham-Walsh, in summing up what he terms a "few general principles" applicable to tactical operations in the mountains on the Northwest Frontier in India, includes the following:

(i) Thorough previous training is necessary for all troops.

\* \* \* \* \*

(iii) Infantry must acquire the power of rapid movement over the hills.

\* \* \* \* \*

(vi) Never leave commanding ground within effective range of the main body unprotected.

(vii) Avoid ravines, move up spurs.

\* \* \* \* \*

We have taught these same "principles." That part of the Field Service Regulations devoted to "Mountain Operations" brings out the same points.<sup>7</sup> We must know the guides and "rules of thumb," but even more important, we must know when to apply them.

It was Napoleon who made the terrain an opportune and flexible agent, always auxiliary to maneuver. This is the *principle* to be constantly kept in mind.<sup>8</sup> It is the task of the commander to make a "dynamic and nonstatic utilization of the terrain." The commander who fails so to use the terrain, but instead seeks inflexibly to follow "rules of thumb" is doomed to disaster.

<sup>6</sup> Par 232, *Elementary Tactics*, Brevet Lieutenant Colonel R. P. Pakenham-Walsh, M.C., P.S.C., Royal Engineers. Sifton Praed & Co. Ltd., London (1932).

<sup>7</sup> FM 100-5 (FSR-OPNS), Section VI, Par 894 *et seq.*

<sup>8</sup> FM 100-5 (FSR-OPNS), Par 133.

## Bomber Crew

NOWHERE in the world are the lives of men as interdependent as in a bomber on a mission. The pilot must be quick, daring, cautious. The gunners must draw a bead on shadows flashing past them at six hundred miles an hour. The navigator has the plane in the palm of his hand from start to finish; every minute he strays off the course makes it sixty seconds less likely that he and his comrades will return. If the bombardier misses, the sortie has been pointless. He takes over at the moment of greatest danger when

the airplane must be in level flight and not engaging in evasive action. During the bomb run, the plane must be traveling a straight course, with speed and altitude constant. No dead engine, or groaning companion with a leg shot off, must interfere with the operation of an intricate bombsight.

—From a Report by the Commanding General of the Army Air Forces to the Secretary of War.

# The New Standard Outline for Operators Manuals

COLONEL W. S. CONROW, *General Staff Corps*  
Director, Maintenance Division, A.S.F.

**T**ECHNICAL manuals giving instruction on the operation and maintenance of all military equipment will soon bear a strong family resemblance.

A "Standard Outline for Operators Manuals" has been prepared and furnished to the chiefs of all Technical Services, with instructions that future manuals coming within its scope, either new or revised, follow as closely as possible the skeleton outline it provides.

For those who operate and maintain military equipment, the advantages of this giant stride toward standardization are virtually self-evident.

As new manuals, written and arranged in accordance with the Standard Outline appear in the field, soldiers will become accustomed to look for certain information in well defined parts and sections.

For example, if it is a matter of controls and instruments that puzzles the operator he will always find what he wants to know in the third section of Part Two covering "Operating Instructions." This will be true whether the manual he is consulting covers a tank or an air compressor. Once the Standard Outline has been fully applied, any new manual that comes to a soldier's hands will have the familiar characteristics of an old friend.

A less impressive but equally important advantage in the Standard Outline is the assurance it provides that new manuals will tell the soldier everything he ought to know.

Technical manuals are written by men who know their subjects well; so well, in fact, that they must exercise conscious, deliberate care to make sure they have included everything that should be known by other men getting first instruction.

The Standard Outline provides a part and section to elicit necessary operating and maintenance information on any item of equipment, and the manual writer who follows it will find it hard to omit any essential thing.

The memorandum which transmitted the Standard Outline included instructions that will be appreciated wherever the manual is consulted. Among the instructions are these:

"Manuals will be prepared in the language of their intended audience, usually enlisted mechanics, utilizing a terse, direct, second person approach.

"Nomenclature employed in description and on illustrations will be uniform and consistent with general practice. Detailed descriptions of equipment will

not be made when necessary information can be conveyed by illustrations.

"Tables or charts of data, introduced by simple explanations, will supplant expository accounts whenever the nature of the subject matter permits."

Such instructions as these clear the way for the quickest possible transfer of information from a manual to a man.

Part One of the Standard Outline, after a general section covering scope and the forms to be used by operating personnel, proceeds to a section on "Description and Data," and finally to one on "Tools, Parts and Accessories." This latter section will include a listing, coordinated where possible with photographs of tools, parts, and accessories with the equipment, when supplied to using organizations. Part One is designed to lay a complete informational foundation on which sound maintenance and operational procedures can be based.

"Operating Instructions" is the general head given Part Two. Information on the operation of equipment is accompanied by a description and location of controls and instruments. Sections of Part Two comprise "Service upon receipt of equipment," "Controls and instruments," "Operation under usual conditions," "Operation of auxiliary equipment," "Operation under unusual conditions," and "Demolition to prevent enemy use."

With each of the section headings is a paragraph suggesting to the manual writer the kind of information required, thus prompting him to furnish specific facts on the equipment he is describing. Here, for example, is the paragraph that accompanies the section on "Operation under usual conditions."

"Detailed instructions necessary to putting equipment into operation such as: assembly, starting, receiving, transmitting, stopping, shifting gear positions, connecting, disconnecting, firing, loading, elevating, disassembly for transport, stopping, etc. Each procedure to be handled in a separate paragraph."

With such a paragraph to stimulate thought, it would be hard to omit anything related to "Operation under usual conditions," regardless of the equipment described.

With Part Three comes "Maintenance Instructions." Its first section, describing "scope," states that "Part Three contains information for the guidance of the personnel of the using organization for the maintenance (1st and 2nd echelon) of this equipment. It contains information needed for the

performance of the scheduled lubrications and preventive maintenance services as well as descriptions of the major systems and units and their functions in relation to other components of the equipment." Again, as in Parts One and Two, there is a stimulating paragraph with each section heading, to make certain that each sub-division of the part supplies all the information the operators and maintenance men should have.

Part Four, "Auxiliary equipment," contains such information for the guidance of the personnel responsible for the operation of equipment as may be "necessary to properly identify, connect and protect such auxiliary equipment while being used or transferred with the main equipment."

For particular instructions on the auxiliary equipment, there are references to other appropriate technical manuals describing the equipment in detail.

"Repair instructions" are covered in Part Five, with which the Standard Outline closes. It is pointed

out that this part may be included in Operators Manuals on simple equipment, where desirable, and when its inclusion will not make the manual too thick for standard printing practice.

The purpose of Part Five is to inform and guide maintenance personnel responsible for the third and higher echelons of maintenance. It is designed to contain information on the maintenance of equipment which is beyond the scope of the tools, equipment, or supplies normally available to using organizations. The Outline closes with an appendix on "Shipment and Storage," and an index.

It will not be long before the first of the manuals prepared in accordance with the Standard Outline is ready for the field. It seems a safe prediction that by the time it has been joined by four or five more of the same structural characteristics, there will be general recognition of the new outline's advantages. It should serve as a valuable guide for those who write manuals, and an invaluable saver of time for those who read them.

## Antiaircraft

[Digest of an article by Walter McCallum in *The American Rifleman*.]

TODAY American antiaircraft, with the aid of intricate detection and range-finding devices, tracks enemy planes to their doom and knocks them out of the sky with well-aimed fire.

The 90-mm happens to be the big gun of our antiaircraft but it is not alone. It will reach far up into the sky, blasting enemy aircraft by night or by day. It is the long range weapon of antiaircraft, but there are other and faster firing weapons. These are the 40-mm Bofors, a fast shooting piece with a capacity of about 120 shots a minute, and the powerful .50 caliber machine gun spouting pellets of death at the rate of 650 shots a minute. An enemy airman who dared dive on a target protected by these weapons could count his life in tenths of seconds.

The accuracy and speed of fire of all the guns used by antiaircraft are amazing. "You don't have to get a direct hit on a plane with the 90," a sergeant explains. "The shell throws a column of fragmentation forward in a burst covering an area of about 100 by 80 feet. It travels like a column of shot from a shotgun, plenty fast." You can imagine what would happen to an airplane, any airplane, hit with such a column of shot.

America is not alone in its perfection of antiaircraft artillery, but it has in the 90-mm gun, and the adaptation of the 105-mm, in the rifle form, two of the finest weapons ever produced for use against

high flying airplanes. Adaptation of other guns also are used, but the gun crews swear by the 90's.

The 90-mm shell is a little more than three and one-half inches in diameter. The gun carries a crew of sixteen to twenty men, including commissioned and noncommissioned officers and enlisted men.

Enemy strafing planes do not get close to the 90's if the 40's and the .50 caliber crews are on the job. Theirs is the job of cutting down the strafing planes to protect the 90's which reach up high into the sky. It is a constant echelon of fire power: the 90's protecting the field artillery and the automatic weapons protecting the 90's from dive bombing and low level strafing.

Every man in the six-man crew of a 40-mm gun learns all phases of the work. He learns to be gunner, azimuth operator, elevation operator, ammunition chief, and so on. In less than a minute they can have the gun moving to new danger spots, so mobile is this fast shooting weapon on land.

Five men usually man the .50 caliber weapon, whose main task is driving off low level attack planes. But one man can do the job in an emergency. With this gun, too, all positions are interchangeable. The man leaning back in the shepherd's crook is a busy person as he traverses the muzzle of the gun to follow the speedy flight of a low-level attack ship.



# Can You Write a Good Message?

MAJOR WILLIAM A. GLASS, JR., *Signal Corps*  
Instructor, Command and General Staff School

**M**ESSAGE writing as a whole was not satisfactory, either by officers or enlisted men. Time, place, and direction of movement were the fundamental elements most frequently overlooked.

"Examples are too numerous to mention, but the

takes under battle conditions that we do in training.

*Can you write a good message?* Unquestionably your answer is "Yes," but is your answer correct? Are you really one of the minority, or do you belong to the great majority who merely let their unbridled thoughts guide the unthinking, illiterate pencil over

THESE SPACES FOR MESSAGE CENTER ONLY		
A TIME FILED	B MSG CEN No.	C HOW SENT Telegraph
		(1) 0
<div style="display: flex; justify-content: space-between; align-items: center;"> <div style="font-size: 2em; font-weight: bold;">MESSAGE</div> <div style="text-align: right;"> <small>(SUBMIT TO MESSAGE CENTER IN DUPLICATE)</small>  <small>(PRECEDENCE)</small> </div> </div>		
<b>NO.</b> (2) _____ <b>DATE</b> (3) December 10, 1943		
<b>TO</b> (4) Lt Smith, 911th Cav Sq Mecz		
(5) Be on the lookout for increased enemy aggressiveness. Secure identifications as fast as possible of hostile 189 or 161 inf. Look for troop movements on roads between ARRAS and PAS EN ARTOIS. Est speed.		
(6) Jones, CG 1st Inf Div <b>OFFICIAL DESIGNATION OF SENDER</b>		(7) 6:30 <b>TIME SIGNED</b>
(8) W. L. Brown, G-2 <b>SIGNATURE AND GRADE OF WRITER</b>		

THERE ARE TEN MAJOR ERRORS IN THIS MESSAGE. HOW MANY CAN YOU FIND?

importance of accurate message writing must be further emphasized in future training."

This quotation is taken from a report on a recent campaign. This is not an isolated case. Almost without exception, reports from active theaters have some pertinent criticisms of the manner in which messages are being written in that particular theater.

Obviously, we are doing no better in our activities within the continental limits of the United States. As General McNair has frequently pointed out, we're going to do the same things and make the same mis-

the message blank? Too many of us consider this cold piece of wood or metal, the all-powerful pen or pencil, as a magic wand which we can—with little or no effort on our part—wave over the message form and come up with a perfectly written expression, not of our thoughts, but of the message itself as we would like to receive it.

Familiarity does breed contempt, and it is our everyday use of the written word which has instilled in us our unjustified confidence in our ability to write good messages. From G.I. to General, we have had daily contact with this method of communication,



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and we assume that this constant exercise has automatically corrected our errors and taught us all we need to know. In our everyday lives we all write personal letters and telegrams, and most of us write numerous military messages ranging from unofficial notes to complete written orders. This easy familiarity with message writing in its various forms has been our undoing.

In combat operations, the accurately written message is a needed helping hand; the poorly written message is a stab in the back.

Messages must be clear, complete, and concise. These three "C's" of message writing are fundamental. They all have a very definite relationship with each other. It is not enough to consider any two of these fundamentals. Each message must be based on all three. Conciseness conflicts with clarity and completeness. We must make some compromise to insure that the message is clear and complete in the briefest possible language.

A message that can be interpreted in any manner other than that which you intend is worse than no message; it is not simply worthless—it has a definite negative value since it may cause great damage and loss of life. Such a message will produce startling results, but they will seldom be pleasant. You may rest assured that, if the message you write is capable of more than one interpretation, the addressee will interpret it differently than you intend. If it can be misinterpreted, it will be misinterpreted.

If you receive a message which leaves you in doubt as to the action required, what do you do? You naturally write a message requesting clarification of those portions of the original message which are not clear. This, of course, requires another message from the original sender, and we have three messages required to do the job which should have been accomplished by the first message. Now, assume that your message requesting that certain points be clarified leaves the recipient not sure of the action you desire, and you have a real mix-up on your hands. When you start trying to clarify the request for clarification, and your opponent (and he's really an opponent by this time) starts trying to clarify his clarification, you might just as well give up. This is all avoided if the original message is clear and complete.

Since the writer does not ordinarily know by which means a message will be transmitted, every message should be prepared in the briefest practicable telegraphic form to insure speedy transmission.

One of the principal mistakes in message writing which has been reported is the unnecessary length of messages. Clear and complete sometimes; concise, practically never.

The bad effects of unneeded length in messages may be summed up under three headings:

1. Delays delivery.

2. Aids enemy signal intelligence.

3. Overburdens signal communications.

The time involved in transmitting the message from the writer to the addressee is one factor. It requires about thirteen minutes to encipher a hundred-word message. Then it takes a good operator eight minutes to transmit the message. Another thirteen minutes is required to decipher the message. Total time, thirty-four minutes—plus the time required for delivery to and from the message centers. This time may, of course, be further increased by too many, too long, too high precedence messages already in the message center. A ten-word message requires only four minutes for enciphering, deciphering, and transmission. If the message is of great importance, that extra half hour may be vital.

The effect of lengthy messages on enemy intelligence is good—for the enemy. Long messages afford the best opportunity for enemy cryptanalysts. Also, the long transmission time involved gives a clue to our command post locations by providing the enemy direction finding stations ample time to obtain complete fixes on the station transmitting the message. Even when we use remote control on our radio sets, enemy direction finding activity—aided by our lengthy messages—will locate them and, as a result, reconnoiter the general area with an increased probability of locating our command posts.

Lengthy messages overload and decrease the efficiency of our own signal communication system. The signal officer attempts to provide multiple means of signal communication. The acting message center chief knows at all times which means of communication are available between our headquarters and all of the agencies which we serve. He also knows which means is the fastest, and the exact capacity of each. He will distribute the load, consistent with security and speed, to the means available to him. However, if he receives many important 100-word messages, his fast means will be bogged down, and one of the normally slower means will become temporarily the fastest. Under these circumstances, it is obvious that communications are being unnecessarily slowed down if messages carrying unnecessary words must be transmitted.

It's easy to say, "My one message won't make any difference," but the additive effect of many "one messages" may be overwhelming, especially in operations like those in Sicily where, on one day, one message center had to transmit over 35,000 code groups. Every unnecessary word in a message is an additional burden on our signal communication system. This is particularly important since peak communication loads parallel acute combat phases.

Messages may be shortened by the use of authorized abbreviations. These must be used whenever possible. For handy reference a partial list of the more common authorized abbreviations is printed

(along with a good set of instructions for writing messages) in the message book. The complete list is given in FM 21-30. However, there's nothing worse than the use of abbreviations which are not authorized. They are subject to misinterpretation. The authorized list of abbreviations is designed as far as possible to eliminate conflicting abbreviations.

Messages may be further shortened by the elimination of prepositions and conjunctions. When necessary for clarity a preposition or conjunction may be required, but in general they add nothing to the meaning of your text.

Everything must be said in as few words as possible. Consider that you are paying for the message at the rate of \$5.00 per word. Actually, this is the case multiplied infinitesimally when you consider the lives involved and the matériel expended as a possible consequence of your message.

At the beginning of this article is a message written on the authorized form. This form is deserving of attention.

The spaces A, B, C, and D must be left blank. As indicated, these spaces are for use by the personnel in the message center.

In space (1), the writer must assign the proper precedence. This is extremely important, and more often than not the proper precedence is not the one assigned.

In a report of operations of a United States army in a recent campaign we find the following quotation:

"The majority of all messages transmitted are overclassified as to priority (precedence) and security."

In the "Recommendations" section of the same report are these statements:

"That in each headquarters the staff officer approving outgoing messages also assign the priority and security classifications.

"That all staffs be given instruction in the classification of messages, both as to precedence and security."

Based on the fallacious reasoning that the message can't be delivered too quickly and that it can be delivered too late, and on the knowledge that the writer is giving himself more protection in case anything goes wrong, it's extremely easy to assign a higher precedence than the message really merits. This is what actually happens in the majority of cases.

The effect of assigning higher than merited precedence to messages causes the whole precedence system to break down, and results in the slower transmission of messages which honestly merit the higher precedences. This means that the delivery of a really "urgent" message may be delayed by one marked "urgent" which really deserves only an operational priority or a priority. A "routine" mes-

sage marked "urgent" must be sent ahead of a message bearing an "operational priority" or a "priority" precedence. In many cases this will result in delaying an important message long enough to cause disastrous results.

A study of the following table on "precedence" extracted from the Command and General Staff School edition of FM 101-10 will be beneficial to the great majority of message writers. The table is self-explanatory.

Precedence		Sequence	Usual content
Written	Abbreviated		
URGENT	O	Sent at once, interrupting all others.	Enemy contact reports. Immediate operations. Flash messages.
OPERATIONAL PRIORITY	OP	Sent after Urgent messages.	Operations messages including aircraft movements. Not for ordinary troop movement messages.
PRIORITY	P	After Urgent and Operational Priority Messages.	Operations messages. Other important messages. Highest administrative message precedence.
ROUTINE	R ①	Sent after Urgent Operational Priority and Priority Messages.	Normal messages.
DEFERRED	D	Sent after all other messages, but not longer than 24 hours after filing.	Messages not requiring immediate delivery; 24-hour delivery assured.

① No Marking.

In the space marked (2) the writer places his own message serial number. This is for easy identification in case it is necessary to check back at some future date.

The space marked (3) is for the date which is written: day, month, (year). For example, 7 May 1943.

In the space marked (4) enter after "To": CG or CO and unit. Not staff section or personal name. Staff reference may be indicated in the body of the message (not at beginning or end) if essential for delivery.

The same army report previously quoted has this to say about addresses: "Messages to be relayed to one or more headquarters must indicate the unit or units to which it is desired a copy be sent, in the address of the message, rather than in the content. Message center personnel must not be expected to search for an address concealed within the message. This causes delays in transmission and increases the possibility of error." The report makes this recommendation: "That originators of messages be held responsible that addresses are listed outside the body of the message."

Space (5) is for the text of the message which

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must be clear, complete, and concise. It must tell *what, where, when*, and sometimes, when requests are made, it must indicate *why*. In other than routine cases it may be imperative to include *how, where*, and *when* to report.

In space (6) enter CG or CO and unit, not staff section or personal name.

In space (7) enter the time at which the message was signed in the 24-hour clock system and the time zone suffix.

In space (8) the writer places his signature, rank, and staff duty. This is for reference only and is not transmitted.

The message at the beginning of this article contains several errors.

First of all, one of the spaces at the top reserved for message center use has been filled in by the writer. The writer may on very special occasions suggest or request that a certain means be used. This may be accomplished by personal contact or by a note accompanying the message, but in no instance should the spaces reserved for message center use be appropriated by the writer.

This is one time that the urgent precedence is correct since the message deals with enemy contact reports.

The writer's message serial number has not been filled in in the appropriate space. This will necessitate a certain amount of lost time if it is necessary to refer back to this message.

The message should never be addressed to an individual by name, or to a staff section.

The official designation of the sender is incorrect. The name of the individual should not appear.

The time signed should be in the 24-hour clock system, and the time suffix shown if required.

The grade of the writer is not shown. This should be indicated as an aid for future reference.

There are several mistakes in the body of the message. "Infantry" is abbreviated "inf." A capital "I" should be used.

"Estimated" is abbreviated "Est." This is not an authorized abbreviation, and should not be used.

The message is poorly worded. It lacks clarity and completeness, and is much too long. There are many unnecessary words. It does not leave the reader with any real picture of what he is required to do. We can cut the words used from thirty-four to sixteen, and present a much clearer picture. This is indicated in the message below.

THESE SPACES FOR MESSAGE CENTER ONLY		
TIME FILED	MSG CEN No.	HOW SENT
		0
<b>MESSAGE</b> (SUBMIT TO MESSAGE CENTER IN DUPLICATE) (PRECEDENCE)		
NO. 2	DATE 10 DEC 43	
TO CO 911TH CAV SQ MECZ		
REPORT IDENTIFICATIONS ELMS 189 OR 161 INF, INCREASED AGGRESSIVENESS,		
TR MOVEMENTS RDS ARRAS PAS EN ARTOIS.		
CG 1ST INF DIV OFFICIAL DESIGNATION OF SENDER		0630 S TIME SIGNED

W. L. BROWN, LT COL, G-2  
SIGNATURE AND GRADE OF WRITER



This message in its correct form tells *what*, *when*, and *where*. The *what* is clearly stated. The *when* is clearly inferred as "immediately" by the urgent precedence of the message, and because immediate action may always be assumed unless otherwise stated. *Where*, for the first part of the message, is obviously the area of present operations, and for the latter part on "troop movements," is clearly stated.

The addressee will report information as obtained to the Division Command Post in the usual manner according to the SOP of the division. In a case not covered by SOP, it would be mandatory that the message contain *how*, *where*, and *when* to report.

In a report from the crack British 7th Armored Division is this statement: "In an armored division, signals can only provide the means. Their right use by the Commanders and staff is at least as important

for success as the best contribution that can be made by Signals!"

This statement, when applied to message writing, is applicable to every unit of the Army. The Signal Corps can "get the message through" but they can't write it or change one single word.

The writer or the officer in the section approving outgoing messages bears the responsibility for the contents of the message.

Perhaps the most famous message of this war is "Sighted sub; sank same." Just four words, but still too long. The same story could have been told in just two words: "Sank sub." Not as dramatic, but much better from a military standpoint.

"Sank sub" tells *what*. Then, if it's important to the tactical situation, *where* and *when* could have been added to make the message *clear, complete, concise*.

## German Speedboats

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article by Rear Admiral Brünninghaus, German Navy, in *Völkischer Beobachter* 9 October 1943.]

REPORTS of the successful operations of our speedboats show during the last few months a rising tendency that is to be warmly welcomed. They are beginning to compete seriously with the larger units in the Navy. When the second World War began, speedboats were still a weapon with respect to whose possibilities opinions differed in the various navies. Most navies considered that their greatest value lay in their speed, and in order to attain this, slight seaworthiness was accepted as a matter of course. In the German Navy from the very beginning a type was aimed at which, in addition to sufficient speed, also possessed a relatively great radius of action, adequate stability, and powerful torpedo armament. To a certain extent a return was made to the first little torpedo boats built under Admiral von Tirpitz, which were also named "S-boats" after the Schiechau shipyards, and from which the large destroyers reaching the size of light cruisers have gradually developed.

Record speeds were attained in the French and Italian Navies. A French *Vedette*, as the French called their speedboats, did 35 knots (65 kilometers an hour), and an Italian boat did 49 knots (91 kilometers an hour). These were gliding boats which did not cut through the water but slid over the surface and therefore encountered less resistance than the ordinary type of boat with a keel. The great weakness of gliding boats is their slight seaworthiness, in consequence of which they can be employed with promise of success only in calm weather.

The German speedboats are boats with keels, and are built entirely of wood since wood meets all the requirements of this type of craft and has but little weight. The engine takes up the greatest amount of space in the boat. Two torpedo tubes are built in, in a fixed position in the bow, and the armament also includes light machine guns for use against planes and small enemy naval vessels. The crew consists of about twenty selected men who must meet high mental and physical requirements. The commander must be a man capable of lightning decisions and endowed with reckless courage. Relief is impossible during engagements which frequently last for twenty hours, and each man must be able to act in several capacities.

At the beginning of the war no one suspected what a rapid development the speedboat would have. On account of the conquest of the western European coast from the North Cape to the Pyrenees, the activity of the S-boats has increased enormously in the Atlantic. Their constant battles in the Channel are matched by their engagements in the Baltic, in the Arctic Ocean, in the Mediterranean, and in the Black Sea. Some of the units of the German speedboat arm participated in the occupation of Norway. They landed many troops in particularly threatened places, sank various Norwegian naval and merchant vessels which attempted to resist, and captured a number of other Norwegian vessels. They have planted thousands of mines for combatting shipping in hostile waters, often immediately in front of enemy ports.

# Air Operations in the Pacific and Asia

[From a Report by General Henry H. Arnold, Commanding General of the Army Air Forces, to the Secretary of War.]

**E**XCEPT for its fundamental premise—the assumption that the United States will eventually yield to war-weariness—Japan's original plan was sound.

Japanese economy was organized into a central zone that comprised the island empire, and an outer zone stretching through the conquered areas. The inner zone was conceived of as a self-contained economic realm, with a virtual monopoly on the nation's industry. The ring of colonies, in accordance with both German and Japanese race theories, was to assume a vassal agricultural status; industry was to be developed only to meet local needs and to supply Japan with critical imports—heavy oil, for one.

Given time, Japan's first rapid series of conquests could be converted to form part of an enviably self-sufficient economic unit. A matchless combination of resources—nickel, tin, manganese, bauxite, rubber, oil—were seized in Malaya and the Netherlands East Indies. These are the raw materials of empire. No traditional mode of naval or land warfare could possibly have broken the defensive ring that Japan counted on for consolidation. In point of fact, the ring is still largely intact.

Japan had the drop on us. Her great offensive had secured a powerful interlocking system of air bases stretching from Formosa to Burma, Malaya, The Dutch East Indies, and on through New Guinea to the Solomons and Marshalls. This network of airfields made it possible for her to concentrate even short range fighter planes at any point—quickly—for either offensive or defensive purposes. Japan—and Germany—realized at the outset that no operation, whether sea or ground, could be successfully conducted without an air umbrella.

In the first phase of the Pacific war it was all we could do to isolate Japan's Aleutian salient, to protect our pipeline to Australia and to dam the flow of Japanese might into Australia itself. True, General Ralph Royce raided the Philippines in specially equipped B-25's, and a few days later (April 18, 1942) General Doolittle and his men took off from the carrier "Hornet" on our first sweep over the Japanese mainland. But these were little more than gallant episodes in a holding war at a time when we could do no more than to hold.

Offense is the essence of air power. This principle of modern war was amply demonstrated in the Coral Sea and Midway actions of May and June respectively. In both engagements, Army Air Force bombers, operating with Navy aircraft and surface ships, helped dramatically to confirm the long standing con-

viction of this country's air leaders—air power, properly deployed and employed, can stop a sea-borne force. In the Coral Sea nineteen enemy ships were sunk or damaged. At Midway, American forces sank at least ten vessels, including four aircraft carriers and two heavy cruisers. They damaged a number of other ships and destroyed an estimated 275 airplanes.

Although the opposing ships never came within sight of each other during the entire Battle of the Coral Sea, it was largely a Navy show. The efficacy of our land-based planes operating alone against a large naval force was finally proved in the Bismarck Sea ten months later.

The crew of one of General Kenney's bombers spotted a large Japanese convoy heading toward New Guinea on March 1, 1943. Thus began the Battle of the Bismarck Sea. During the three days that followed, the crews of 162 Allied planes repeatedly attacked this convoy and its protective cover of land-based fighters. Allied heavy bombers destroyed many Japanese fighters while on the ground at their Lae, Finschhafen and Gasmata bases. Other bombers, medium and light as well as heavy, made attack after attack on the convoy with highly coordinated precision and mast-head skip-bombing tactics. Techniques of this sort had been developed in the course of months of hard, driving rehearsals. By March 4, the convoy had been smashed.

Both tactically and strategically, this was an outstanding operation. Besides the ships sunk, from fifty-nine to eighty-three planes had been shot down and at least nine others damaged. The Army Air Forces lost one B-17 and three P-38's in combat, and a B-25 and a Beaufighter through other causes. Total Army Air Forces personnel losses came to thirteen while the Japanese lost approximately 12,700 officers and men. Entirely unassisted, the Fifth Air Force, besides disposing of large numbers of airmen and sailors, wiped out an entire division of troops.

Thus the Fifth Air Force, operating in conjunction with our amphibious, naval, and land forces in and around the Solomons and New Guinea, had seized the initiative in the Southwest Pacific. For the first time in that theater we were able to strike at times and places of our own choosing.

The primary objective of Allied forces in the Southwest Pacific is to advance our own network of airbases deep into the Japanese perimeter. But before this campaign could roll into its present gear, the threat to Port Moresby had to be removed. This was accomplished in the Papuan offensive through Buna and Gona.

All Japanese efforts to reinforce the Buna-Gona region were frustrated by our long-range heavy bombers. Our Troop Carrier Command flew a complete striking force—troops, equipment, and food—into the area. In one air movement 3,600 troops were brought from Australia to Port Moresby, and 15,000 from Moresby over the high Owen Stanley Mountains to the air strips near Buna. These troops were not only transported but were supplied by air at a rate of more than two million pounds a week. Construction equipment and steel mats and asphalt moved by the same route. A four-gun battery of 105-mm howitzers was ferried over by a B-17. Sick and wounded were evacuated on the way back. The entire operation proved to be of far-reaching tactical consequence.

We learned a great deal in Papua. Maps don't show jungles, swamplands, snipers, or mosquitoes. In crossing the Owen Stanley Mountains we had to cope with all these and a great many other obstacles. The only dependable way our ground forces could be supplied was by the dropping of materials from the air. At first we had no supply of parachutes. It was a straight air drop, and the recovery factor was never higher than twenty percent.

The airdromes which spearheaded and covered our advance had to be cut out of the heart of the New Guinea jungle. Normally, it is safest to have landing fields a few miles behind the front lines, but not in New Guinea. On that terrain a few miles might mean a day's journey. There our fields often had to be built within firing range of the enemy. Natives and soldiers alike worked in hourly danger at clearing the high kunai grass and preparing the strips. After each job was completed, troops and supplies moved in by air. When the front line changed, new fields had to be cleared, leveled, and topped off with landing mats—always a back-breaking process.

In the offensive on Lae, we had to build three strips in the mountains within fighter range of that Japanese concentration. We picked a site on the basis of aerial photographs, and a party of American aviation engineers made a long overland journey to reach it. With the help of natives they cleared enough ground to permit our transports to land. Then our C-47's ferried in an air-borne engineer battalion. It required over one hundred C-47 loads to accomplish the transfer of the unit with its minimum equipment. In addition, an air-borne antiaircraft company had to be brought in for protection of the field. This was the way we built our Marilinan field in a month's time.

Marilinan paid for itself in one quick series of missions. It was a staging area for the striking force which, from August 17th through the 21st, destroyed or rendered wholly unserviceable 309 Japanese aircraft at Wewak.

Marilinan was also one of the bases which helped to provide fighter cover for the great paratroop land-

ing at Nadzab, a remarkable achievement foreshadowing at least part of our pattern of victory in the Pacific.

The landing at Nadzab put an end to the carping at our early "palm-tree-to-palm-tree" advance. Here was warfare at 200 miles an hour. In less time than it takes to read this page, our Fifth Air Force landed 1,700 American paratroops, fully equipped and supplied, plus thirty-six Australian artillerymen with guns.

These operations in the Markham Valley are well worthy of note. In front, forty-eight B-25's opened the fight by strafing Japanese positions and dropping fragmentation bombs. They were followed by six A-20's that laid the smoke screen which covered the landing of our paratroops from the ninety-six C-47's. Above these flew five B-17's carrying matériel, and three B-17's with Generals MacArthur and Kenney and their staffs. A fighter escort of 146 P-38's and P-47's covered the flight at various altitudes while at Heath's Plantation, halfway between Nadzab and Lae, four B-17's and twenty-four B-24's bombed and strafed the Japanese positions. Five weather ships operated along the route and over the passes to keep units posted on conditions. This was a far cry from the days when our decimated squadrons were being blasted out of the skies over Luzon.

The day after the landing at Nadzab, the aviation engineer who had built the airdrome at Marilinan landed a Cub plane in the jungle and arranged for Australians and natives to prepare a strip for transport planes. This was the prelude to the arrival of two air-borne engineer battalions, from Marilinan and Port Moresby, and the rapid construction of new airfields in the Markham Valley, *behind* the Japanese position at Lae which held out for ten more days.

Five weeks after the landing at Nadzab in the Markham Valley, we raided the Japanese stronghold of Rabaul. Our box score on that mission was three destroyers, three medium merchant vessels, thirty-two small merchant vessels, sixty-eight harbor craft, eleven luggers, and two patrol craft sunk or destroyed; one submarine, one submarine tender, one destroyer tender, one medium merchant vessel, badly damaged; 184 enemy planes destroyed or damaged. Our own losses were two B-24's, one B-25, and one Beaufighter. Our air superiority in the Southwest Pacific has since been definitely established.

The ease with which we executed our final operations in the Markham Valley may be misleading. There is long, hard planning, endless training, repeated dry runs, devoted labor and matchless ingenuity behind undertakings of this magnitude. The box scores of the Bismarck Sea, Wewak, and Rabaul do not tell the story of Lieutenant Colonel William Benn who did so much to refine skip-bombing tactics; of the parachute fragmentation bombs used so effectively in this theater for the destruction of enemy airplanes on the ground; of Major, later Lieu-



tenant Colonel, Bill Gunn who crossed up the experts by packing eight 50-caliber machine guns into the rebuilt nose of the B-25; of Major Ed Lerner who also helped to develop skip-bombing tactics. A report about Major Lerner states that "one time he flew so low that when an enemy shell exploded nearby, his plane staggered through some treetops at the end of the field and emerged with its nose bashed in, the front surface of its wings crushed, its belly deeply dented, and one of its engines useless. 'After that,' Lerner apologized when he got home, 'I only made two more passes at the field because the plane didn't fly so good.'"

General Kenney's surprise and shock tactics have shaken the Japs out of their groove; when their routine is disrupted the Japs are baffled, and baffled Japanese do not fight well.

That is not to say Japan will fold, as the Italian Fascists have, under the mere threat of invasion. There is no doubt but that Japanese industry and shipping will have to be systematically shattered before her armies actually crumble. Our Commander in Chief has said, "There are many roads that lead right to Tokyo, and we're not going to neglect any of them."

Our bombers have begun to make their presence felt in China, although in that theater we have not yet assumed the offensive. On the Asiatic mainland, time has, in one sense, been fighting on the side of the Celestial Empire. But time is a fickle ally. Potentially, China remains our most effective base for aerial operations against Japan.

Supply is our problem in China. To supply our growing air strength in that country has been perhaps the greatest single challenge to the efficiency of the Air Forces. Every item of equipment necessary for the maintenance and operation of our 14th Air Force must be flown into China from the outside. That is the primary, fundamental fact of our present strategy in Asia.

It may throw some light to consider this fact in terms of gasoline alone. In the round-trip over the Hump between Assam and Kunming, the C-87 transport now in use can deliver four tons of 100-octane gasoline. To do so, the airplane must consume three and a half tons of the same precious commodity.

The crews of a heavy bombardment group in China must ferry over their own gasoline, bombs, replacement parts, and everything else in their own B-24's (the C-87 is a converted B-24). Before this bombardment group can go on one combat flight, it must make four trips over the Hump. To perform one extremely dangerous mission, those crews must make four separate flights over the most hazardous mountain terrain in the world. Until such time as we conquer the territory and build the road into China, and/or capture a seaport, we must follow this procedure whether it is for forty aircraft or 4,000.

Our problem of making supplies flow into China by no means starts in Assam. When Major General Lewis H. Brereton and his men first arrived in India from Java they found a total of ten airdromes in that entire sub-continent. Until that time, the British defense of India had been based on the assumption that the only threat could come from the northwest frontier—the Kyber Pass. The Japanese seizure of Burma suddenly threatened attack not from the northwest but from the east.

A complete and rapid readjustment of defenses was in order, a formidable task in any country—let alone India. There, the enervating heat, the apathy of the natives, the total absence of modern methods and equipment, combined to form a staggering prospect.

Assam is separated from the rest of India by the Brahmaputra, one of the longest rivers in the world, and one that has not a single bridge through its length in that country. Its mean level varies with the seasons. At certain times of the year, a twenty-five-foot rise and fall puts river ports out of commission during both flood and ebb periods.

There is no through road between Assam and Calcutta. Rail transportation is complicated by changes in gauge, and the existence of antiquated train ferries. The capacity of the inland water system was for a long time even lower than usual because power units and barges had been moved to Iraq. And during the monsoon season, nearly all non-river transportation ceases because the area is completely flooded.

The monsoon season lasts, in Assam, from mid-May to mid-November. The average rainfall is about 150 inches as compared to a twenty-inch average for a similar period in, say, Virginia. Malaria is a constant threat.

Life and labor are cheap in India. Sections of tea land were cleared for our airdromes and runways were painfully built with rocks taken from the river bottom and carried in baskets on the heads of coolies. Antediluvian stone rollers, pushed by other coolies, are used to pack down the rock.

Our flying transport operations are no less difficult. The pilots who fly our transports in that weather are as exposed as any in actual combat. 17,000-foot mountains have to be cleared by instrument flying; if our men veer to the north they meet 22,000-foot peaks while to the south they drift over Japanese-held Burma. It is no country to crash-land in.

That is the route our supplies must travel *after* they have already been shipped more than 10,000 miles—supplies not only for our 14th Air Force but to help equip the Chinese Army and to build and defend China's airdromes.

And yet the 14th Air Force is in the skies over China. Under the command of a master tactician, General Claire L. Chennault, American fliers of the 14th have from February 2, 1942, to October 31,

1943, brought down 351 Japanese aircraft, with a loss to themselves of only sixty-eight, an unrivalled record. That is not counting enemy aircraft probably destroyed or damaged.

A record of this scope is all the more impressive in that it was built up in the course of what is, by today's standards, aerial guerrilla warfare. The precondition of all successful guerrilla operations—an actively friendly countryside—exists in China, and the 14th has taken advantage of this by helping the Chinese create one of the most efficient aircraft warning systems in existence. Our bases are notified of the approach of a Japanese flight almost at the moment it takes to the air. This warning system was

one of the factors that enabled the 14th to provide the support which helped to stop the Japanese cold in the Tungting Lake offensive of May and June, 1943.

In its primary mission of protecting the terminal bases of air transport, the 14th Air Force has been completely successful. At the same time, we know that air transport must be established for our Chinese bases. It need hardly be stated that we have no intention of allowing our air operations from the Asiatic mainland to remain on the level of guerrilla warfare. Neither Japanese shipping nor Japanese industry will survive the bombing in store for them.

## German Coastal Defenses in Norway

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article by Gert Habedanck, war reporter, in *Die Wehrmacht* 4 August 1943.]

FOR MONTHS the English press has been discussing the question of whether Norway is a strong or a weak flank in the defense of Europe. The pros and



Entrance to a well-concealed German Shelter on the Norwegian Coast.

cons are about equally balanced, but repeatedly the warning voices of those in a position to know are heard, calling attention to the defensive strength of

the 200,000 rocky islands and cliffs of the Norwegian coast.

For forty months German soldiers have been stationed there, silently waiting. In a total of 1200 days of hard labor they have built fortresses on the inhospitable islands, large and small. Many of the islands lie uninhabited in the coastal forefield. No ship will be able to go past them unmolested. When the enemy attacks Norway he must first capture the rocky islands off the important fjord ports. Naval artillery and bombers will have little effect against the Norwegian rock which is much harder than the rock of Gibraltar.

During the preparatory bombardments, the defending crews can remain safe in their shelters and casemats deep in the rock. Then, as soon as the firing ceases and the landing boats of the enemy approach, comes the crucial moment for which the crews have been prepared by means of numberless practice exercises. The soldiers have learned to leave their rocky bunkers in a matter of only a few seconds, and they know by heart the distances in their field of fire. They are able to find their way in the labyrinth of subterranean passages, for they know accurately the way leading to all the positions. Lastly, they also know that enough ammunition, drinking water, and food are stored in bombproof magazines to last them even in case of a long blockade of the island.

The life of the crew of one of these island positions is hard and monotonous. Fortifications are never finished. Minefields must continually be changed and positions improved. The soldiers find relief from loneliness by means of the radio or the infrequent arrival of mail from home.

# Tell Them "Why"

COLONEL ARTHUR G. TRUDEAU, *General Staff Corps*  
Deputy Director of Military Training, ASF

THE MAJOR effort of all commanders during periods of training has been devoted to imparting knowledge to trainees, frequently to the exclusion of other important functions. It is the purpose of this article to discuss briefly certain intangibles whose importance is sometimes underestimated depending on the quality of leadership demonstrated during training.

Leadership in the military field may be defined as the ability to direct the actions of others through superior character and knowledge so that capable performance, thorough cooperation, unflagging effort, and unlimited sacrifice are willingly tendered by them. Character as broadly defined covers such factors as loyalty, courage, self-sacrifice, dignity, decision, judgment, initiative, and appearance. Knowledge includes not only the knowledge of what technique and skills must be imparted to subordinates, but also knowledge of what traits and characteristics common to the American civilian must be developed or eradicated to make him a first-class fighting man. There is no clear line of demarcation between character and knowledge that can be defined simply. These qualities must abound in sufficient amounts, however, to insure confidence within the leader himself and instil it in his subordinates. A blending of the two at the highest possible level establishes the relative effectiveness of the leader.

In addition to the task of imparting knowledge at our training installations, the task of instilling the "will to fight" has been—and continues to be—a major problem. The imprint made on young minds of the freedoms our country fosters, of respect for our fellow man, of motherly solicitude for health and welfare, and of countless other influences to which subjected during youth and early manhood cannot be eradicated by merely putting men in uniform. Our whole *raison d'être* has had to be shifted to meet the challenge of total war by an enemy generation bred on hate, greed, and egotism. To instil the discipline to control men in battle; to fill them with the will to fight, to kill, to die if need be—all with the cunning of the Indian—is an Herculean task.

The level of training can be raised through accent on the development of character in units and individuals. The battlefield is mercilessly accomplishing this result, but it is preferable and more economical to do it in training. Let me explain:

During the training cycle, the functions of the commander of any echelon might be defined as the education and indoctrination of his immediate subordinates and the organization, equipping, training, and welfare of his entire command. Education and

indoctrination must include a thorough orientation of all members of the command. The reasons for this conflict, the nature of our allies, the sacrifices made and to be expected must all be understood if our men are to be psychologically ready for the stress of battle. Officers skilled in assembling necessary data in this connection are valuable on any staff, but the responsibility for effectively disseminating this information is a function of command. Too often such education and indoctrination is relegated to the background because the commander himself is too absorbed in his own education and administrative responsibilities.

The character of the leader is reflected by the character of his organization. We often refer to the latter as *esprit* or morale but these terms merely indicate the outward expressions of a unit's character by its discipline, enthusiasm, capabilities, physical condition, and confidence in its ability to meet any situation. Its existence or non-existence is not a question of luck but of leadership. The field manual on this subject is the field of human experience and we are often negligent in applying the lessons learned over centuries in this field. Every leader from the platoon up should pay more attention to this vital aspect of command. If a unit isn't ticking, it should be wound up, but remember—the leader is the mainspring. Is the unit poorly disciplined? Lethargic and dull? Careless in appearance and condition of equipment? Ineffective in performing its functions? Are the men dissatisfied or resentful? If so, and the commander is known to have sufficient technical knowledge of his task, then it is apparent that the force of character and understanding of human nature needed to exploit this knowledge is lacking. He has failed in his job, and all of us know units too close to this level to satisfy us. The imprint of the leader is always stamped on his subordinates whether he wishes it or not, and when exerted for the common good it is a major factor leading to success in battle. It makes men brave cold or heat, hunger or pain. For George Washington, men marched with feet oozing blood. Today, on far flung fields of battle, many are braving equal sufferings for leaders little known except to those subordinates who have the good fortune to serve under such men.

Men do not want to be cannon fodder or matchsticks—even the meanest wants a goal in life above the earth we are mired in, particularly at the very time his life is at stake. Give that to a man—and he is worth ten men. Some commanders fail to tell their men "WHY." We must insist on at least one period every week to inform our men what this war is all



about and how they can perform their expected tasks best. We must utilize every opportunity to make our men aware of what we are trying to accomplish. It is a surly unit that feels the mess sergeant just failed to show up with the noon meal while on the march, but the Company Commander who says, "Men, there will be times in combat when we will be hungry—today on the hike, we'll make it without a noon meal. Let's find out if we've got enough notches in our belts," has made a game that most will play willingly and the remainder will accede to quietly even if from shame. Here is one field where the platoon leader can be the equal or better of higher commanders even though his command may be limited. The Greatest Leader ever born had direct command of only a squad—the Twelve Apostles, but eleven of the twelve willingly offered their lives for a cause they understood and believed in. They knew "Why."

If a few simple rules were to be given with a view to securing more effective leadership in every echelon during training, they might be as follows:

1. Know human nature and your job. Professional knowledge is not sufficient. We must reach the inner sanctum of subordinates during training if we expect the ultimate results in action.

2. Guide and educate subordinates to maintain the highest personal standards, to use common sense,

to care for their men, and to have a thorough knowledge of their job. To gain moral ascendancy over your men, you must exhibit the moral force including the willingness to sacrifice everything for their sake as well as the physical and mental capacity to lead.

3. Don't let concentration on "the broad picture" obscure attention to details. Be exacting in all requirements and follow through on all orders. A leader must be relentless on discipline and performance of duty, but if fair and just, he is the "old man" to his unit even if he is only twenty-three years old. Few mistakes miss his eye and all he sees are corrected promptly in a calm, collected manner that demands respect and a determination not to fail again.

4. The briefing or orienting of subordinates is essential from induction to discharge, whether in training or operations. Within the limits of security, tell them the when, where, how, why, and what for. The tougher the going—the more it will help. Our men are intelligent, curious, and purposeful. It is an American's habit to seek what he wants, and buy it if he finds it. Surely in a business involving a commodity as valuable and irreplaceable as life, he is entitled to the full story. Real leadership during the training period will give it to him.

## The "Tiger" Travels Under Water

THE GERMAN "TIGER" TANK IS CAPABLE OF BEING MADE WATERTIGHT & CROSSING RIVERS, ON THE RIVER BED, TO A DEPTH UP TO 15 FEET.



GERMANY'S 56-ton "Tiger" tank, known to the British as the Mark VI and to the Russians as the T-VI, first made its appearance in the Tunisian campaign and on the Russian front about the same time. German propaganda hailed the new super-panzer as an "impregnable fortress on tracks" and a victory-winning weapon. But, as in the case of so many of the enemy's so-called war-winning novelties, the myth of the "Tiger's" invincibility was soon exploded. However, the design of the tank incorporates

an excellent watertight system. The engine is housed in a watertight compartment at the rear of the hull. Rubber seals are fitted to all the main openings, valves prevent water entering through the exhausts, and the air-intakes have telescopic extensions which protrude above the water-level. The "Tiger" is thus able to cross rivers as deep as fifteen feet.

(From *The Illustrated London News*, Great Britain, 25 September 1943.)

# Recovery of Materiel in Combat

MAJOR WILLIAM C. FARMER, *Ordnance Department*  
Assistant Director of Training, The Ordnance School

*Major Farmer went to Northern Ireland with the First Armored Division in the spring of 1942 and to North Africa from England with the same organization in the fall of the same year. He remained assigned to the First Armored Division until after the Kasserine battle in Tunisia, finishing the Tunisian campaign as Assistant Ordnance Officer of the Second Corps. During the Sicilian invasion he made the beach landing with units of the 1st Infantry Division at Gela while still Assistant Ordnance Officer of the Second Corps, although during the first nine days of the invasion he was the acting Ordnance Officer of the corps. In the invasion of Italy he was attached to the Ordnance Section of Allied Force Headquarters and Fifth Army to assist in the planning and as an observer.—THE EDITOR.*

**N**EAR FAID PASS in Tunisia a tank transporter approached a knocked-out tank at a crossroads. The driver turned off the road to circle the damaged vehicle. There was a bright flash accompanied by a loud report and the right front wheel of the transporter flew straight up through the fender. Near Beja another transporter edged slowly past several knocked-out Mark VI tanks. Another explosion, and another wheel sailed through the air. The German teller mines were scoring against our ordnance recovery units.



KNOCKED-OUT MARK VI TANKS

Between Sbeitla and Kasserine an ordnance heavy wrecker was proceeding swiftly down the road on a recovery mission. Suddenly there was a roar accompanied by the chatter of multiple machine guns and the crash of bullets through metal, wood, and glass. The crew had dived to safety. The lieutenant in charge found a bullet hole through his pistol holster. None of the personnel were casualties, but the wrecker was fiercely ablaze. A Messerschmitt had scored.

Near El Guettar a recovery section approached several guns and vehicles which had been knocked out by enemy artillery. During the process of evacuation the enemy artillery opened up and dropped shells throughout the area. In spite of the enemy fire, the disabled guns and trucks were successfully evacuated, repaired, and placed back in service without any losses of men or matériel being suffered by the ordnance recovery party. A score for ordnance evacuation against the enemy.

These incidents are but a few of many similar brushes with the enemy encountered by ordnance recovery parties throughout the campaign. Time and again these parties recovered ordnance equipment, and subsequently returned the repaired items to action against the enemy. These results more than justified the few losses of their own matériel.

Ordnance maintenance and evacuation units of divisions, corps, and armies consistently operate under combat conditions with, and in close support of, combat troops. These ordnance units are constantly required to furnish recovery and evacuation personnel and equipment for attachment to, or in direct support of, combat teams which are engaging the enemy. It is frequently necessary for these detachments to operate well forward and under enemy observation and fire. They are also subjected to frequent strafing and bombing missions. Probably the biggest single hazard is from mines and booby traps. In order to keep casualties of personnel and matériel as low as possible, most battlefield recoveries are undertaken at night. This lessens the chances of casualties from air, artillery, and mechanized units, but slightly increases the hazards of enemy mine fields and anti-personnel mines.

The amount of disabled friendly and enemy ordnance matériel which must be recovered and evacuated during actual combat has always been beyond the immediate capabilities of the maintenance personnel in the line battalions and regiments, in division ordnance companies, and in ordnance maintenance battalions of armored divisions.

The tremendous quantities of ordnance matériel in our present army, in comparison with those available in the armies of some of our Allies, can well be illustrated by the following incident in Tunisia. A native French trooper was on sentry duty at a crossroads near the front on a dark night. He was approached by several soldiers on foot who answered his challenge by calling that they were Americans. The sentry immediately killed them all with his sub-machine gun. Examination of the bodies disclosed that they were Germans in American uniforms.

## MILITARY REVIEW

When asked how he knew they were Germans, the sentry replied: "That's easy—all Americans come in jeeps!"

Recovery of our own or enemy matériel in combat requires cooperation between combat troops commanders and commanders of the ordnance units involved. This can only be accomplished by constant liaison. It is rather superfluous to point out that while recovery of matériel may at the time be the prime consideration of the ordnance officer, it is *not* the main objective of the tactical commander, whether he be a company commander or commanding general of a combat team or command. Therefore the liaison and greater amount of cooperation must come from the ordnance personnel concerned. Cooperation to the fullest extent will be forthcoming from most

screen the recovery personnel from mechanized attack during the recovery of several tanks disabled in a mine field which was not under direct fire, could well be justified.

On one occasion in Tunisia, ordnance troops established a collection point for recovered equipment immediately to the rear of a combat team facing the enemy; both flanks were open for a distance of about seventy-five miles, and no elements to the rear were closer than thirty miles. Nightly forays were made from this point to secure matériel which had been knocked out during the day. Not only was it necessary for the recovery parties to be well armed and prepared to face enemy patrol action, but the rather isolated position of the collection point also necessitated the establishment of a patrol and outpost sys-



AN M-1 WRECKER RECOVERING AN M-1 MEDIUM TANK BEHIND A SMOKE SCREEN

tactical commanders when they have the factual evidence of their disabled and vitally needed equipment being recovered, repaired, and put back in their hands for use against the enemy.

Commanders of combat troops should assist ordnance liaison officers in such matters as:

1. Keeping abreast of the local tactical situation.
2. Securing exact location of disabled matériel and, if necessary, furnishing guides.
3. Providing any necessary combat troop support to include patrol action, armored support, and smoke screens—the amount, of course, depending on the local tactical situation and availability for the purpose.

Positive results in recovery, which will be accomplished by the use of such troop support, should be a large determining factor in committing combat troops for the purpose. The jeopardizing of several tanks in an attempt to recover in daylight a tank which has been knocked out by an unneutralized antitank gun could not be justified. Conversely, the use of several tanks on an unprotected flank, to

tem, as well as close-in interior guard for the protection of the collection point itself. This defense was coordinated as much as possible with the nearest combat unit, a company of an armored reconnaissance battalion.

A reliable and definite system of communication between patrols and outposts and the headquarters of the ordnance unit must be established. This should consist of as many definite means of communication as possible. Radio messengers mounted on motorcycles or jeeps, and Very pistol signals should all be utilized. Reconnaissance of all roads should be made in daylight and all information of this type thoroughly assimilated by *every* man in the command. Providing high ground is available for observation points, patrols can be replaced during the daytime by observers; the personnel and weapons of the patrols can be used for close-in antiaircraft protection of the collection point.

The actual selection of strong points, gun positions, and final protective line for the close-in protection of the collection point should be established



## RECOVERY OF MATERIEL IN COMBAT

in the same manner as laid down in pertinent field manuals for use of infantry troops.

During the latter half of the campaign in Tunisia, a provisional "corps wrecker and recovery unit" was formed from one of the corps ordnance battalions. Under the leadership of a well-trained, aggressive ordnance officer, it operated at night in terrain that was occupied by both friendly and enemy patrols and recovered much damaged American matériel which had been knocked out during the day. Some enemy matériel was also recovered or destroyed by this unit; however, due to the efficiency of the enemy's similar recovery organizations, it was seldom that this unit was able to secure enemy matériel from between the front lines. This unit operated successfully throughout the latter part of the campaign; casualties to personnel and matériel were negligible compared to the amount of potentially serviceable equipment recovered. Many other recovery parties of varying sizes composed of personnel from an ordnance maintenance battalion of an armored division, from ordnance light maintenance companies, and from maintenance units of combat battalions and regiments operated successfully throughout the majority of the campaign, within the means of recovery equipment available to them.

The successful operation of the above-mentioned units or any similar units is largely dependent on the amount and quality of training of all officers and men in the organization. Complete and thorough coverage of the following subjects is a *must* in the proper training of such personnel.

1. Scouting and patrolling and small-scale infantry tactics.
2. Use of maps, aerial photographs, and compasses—quickly, accurately, and at night.
3. Driving of heavily loaded vehicles over extremely difficult terrain and roads in all sorts of weather at night.
4. Proficiency in the use of block and tackle, slings, rigging, etc., under blackout conditions.
5. Operation of all types of motorized and armored vehicles.
6. Aircraft recognition and antiaircraft fire with machine guns.
7. Marksmanship with all small arms, including bazookas and grenade launchers.
8. All types of mines, booby traps, and mine fields, to include markings of friendly fields, defuzing and removal of mines, and actual operation of the engineer mine detectors.
9. Service of the piece and direct laying of all guns up to, but not including, the 155-mm howitzer.
10. Demolitions and destruction of ordnance matériel.
11. Bayonet drill, hand-to-hand combat, and battle courses.
12. Self-reliance and discipline.

From the above it is obvious that all ordnance personnel must be thoroughly trained in many strictly military subjects prior to reaching the combat zone. The training of such ordnance troops could very well be likened to the training of sailors. The prime job of sailors is of a technical nature in the operation of their ship; as a secondary job, they must be able to go on the beach as a landing party and fight as infantry. Ordnance men must be technically proficient in order to recover, supply, and maintain all ordnance matériel; and, at the same time, they must be trained and prepared to fight as combat troops in the protection of their own matériel and comrades.



GERMAN 88'S IN TUNISIA

It is essential that all ordnance men be thoroughly trained in the service of the piece and direct laying of all types of weapons below 155-mm, and including self-propelled guns and tanks, which might at any time be present in the service park or collection point. On one occasion during a threatened tank breakthrough by the enemy in Tunisia, a formidable array of self-propelled guns and tanks was manned by ordnance personnel in a matter of minutes. During the beach landing in Sicily, when a breakthrough was made by enemy tanks, ordnance personnel placed in action at close range several 105-mm howitzers which had just been repaired by an armored maintenance unit.

The sudden appearance of an armored patrol or armored column on the flank or in the rear of an ordnance recovery party, collection point, or bivouac can easily result in haphazard and sporadic resistance on the part of the ordnance personnel, unless they have been trained to cope with such situations.

Adequate and reliable signal communications are extremely vital to any successful recovery program. Messenger and field-telephone communication should be supplemented whenever possible by radio communication between ordnance battalion and company headquarters, collection points, and recovery parties. Due to the limited numbers of wave lengths and radio sets available, it has never been possible to set up adequate radio facilities within the ordnance organization of the corps or armies operating in the field. This is a subject which should be thoroughly studied by the ordnance officer of a corps,

army, or task force, together with the signal officer, and a network of intercommunication set up as quickly as possible. Ordnance battalions should have their own organic radio operators and radios; however, if this is not feasible, it may be possible to secure them on a loan basis from a signal battalion through the signal officer. A messenger service for transmission of technical information and other strictly ordnance information, to include location of disabled equipment, etc., must be maintained between the ordnance headquarters coordinating the recovery efforts and the different collection points and recovery teams.

After the initial assault, one of the first ordnance units to reach the beach and press inland in the wake of the combat elements should be an ordnance collection and evacuation unit, in order to collect both allied and enemy matériel and get it into central collection points where it may be repaired or salvaged. Tardiness in performing this function will cause much needless damage to abandoned matériel of all categories. It is necessary for this matériel to be brought quickly to a central location in order to eliminate stripping and damage by curious and souvenir-hunting civilians and soldiers. Also, the quicker such matériel is brought to this point, the quicker can part of it be put back in operation and placed in the hands of combat troops. In many instances one piece of badly damaged equipment could be placed back in operation by utilizing assemblies from one or more items of equipment of the same



VIEW OF RECOVERED AXIS MATERIEL IN TUNISIA

type which have also been damaged severely. The quick return of such matériel to combat is particularly important during the initial phases of an invasion, due to the limited amount of equipment which will be ashore as replacements during this phase.

It is impossible to cover the subject of recovery without mentioning a few things about cannibalization. Recovery personnel, normally being the first troops to have a disabled vehicle in their possession, are too often prone to start the vicious cycle of improper cannibalization.

It is, of course, essential in many cases to cannibalize parts in order to place equipment in operating

condition; however, except in emergency, this should be done only by an ordnance unit and handled so that other parts and accessories on the cannibalized vehicle will not be wasted. It is much better to have a crew of mechanics completely strip the vehicle of all salvageable parts which are then placed in stock, than it is to remove parts from the vehicle only as they are needed. Otherwise, due to sudden moves of the unit, much matériel must necessarily be abandoned for the time being, due to lack of wrecker and transport facilities available for the movement to the new location. All serviceable parts would, of course, under this plan, be moved with the organization and not abandoned to deteriorate and possibly be stolen or never recovered at a later date.

All troops have a tendency to strip only the fast-moving parts such as carburetors, generators, tools, etc., from any vehicle which is found abandoned. This is a practice which the ordnance officer should attempt to discourage as forcefully as possible through command channels. Many vitally needed parts are not available in second and third echelon repair units due to existing shortages in stock, and at the same time the parts are actually in the hands of various units due to the above practice. Many drivers secure a half dozen fast-moving items by surreptitious cannibalization, and keep them in their own vehicle just in case they are ever needed. These parts remain in this vehicle, unknown to the proper maintenance personnel, even though another vehicle in that organization or in a neighboring organization is dead-lined for lack of such a part.

The over-all success of "Recovery of Matériel in Combat" must necessarily start in the planning phases of all echelons of command and ordnance special staffs. The more or less accepted doctrine as to division of responsibility in recovery and evacuation is the ideal situation. In combat the ideal situation will rarely exist. Combat troops can recover and evacuate *some* matériel. Support from battalion and regimental maintenance will enable more to be recovered. Support from divisional, corps, and army ordnance units will enable still more matériel to be recovered and evacuated promptly. Of course there is a "saturation point" on the amount of recovery personnel and equipment needed for the job. In Tunisia and Sicily this point was never reached. It behooves staff officers, charged with the planning of an operation, to anticipate the number of recovery units needed to support the combat units and include them in the troop list.

A comprehensive and well defined SOP must then be drawn up and subsequently be understood by all echelons.

Commanders of combat troops must be thoroughly indoctrinated with the necessity for an aggressive all-out effort to recover all matériel possible which has been knocked out.

Complete specific information as to channels of

information and what information is needed should be included in the administrative order if not already included in the SOP. In any case the actual geographic locations of collection points, of axes of evacuation, and of zones of responsibility, together with attachments of recovery units or parties, or information relative to support which will be furnished, etc., should be laid down in the administrative orders.

Clearing points for information and the keeping of up-to-date operational maps and logs of knocked out, abandoned, destroyed, and recovered friendly and enemy matériel should be established. This clearing point should preferably be the headquarters of the most forward located ordnance battalion in a given sector. Information, orders, and reports relative to recovery and evacuation *from* and *to* combat

units, unit maintenance, collection points, recovery parties, division, corps, and army ordnance officers should continue to funnel through this particular headquarters in order that a clear and complete picture of the situation is available at all times.

The combination of intelligent planning, well-defined standing operating procedure, adequate liaison, cooperation between all elements of combat troops and attached or supporting troops, realization of the importance of the over-all mission of recovery to the successful accomplishment of a campaign—*plus* well-trained, aggressive ordnance troops with sufficient recovery equipment—will enable our "Recovery of Matériel in Combat" to exceed the present results now obtained by the Germans who are admittedly "masters of the art."

## Flying Safety

[From a Report by General Henry H. Arnold, Commanding General of the Army Air Forces, to the Secretary of War.]

FLYING safety is vital both to our individual men and to our program; we need every soldier. Defeating the enemy depends on our ability to send skilled combat crews against him in increasing numbers.

Let us not gloss over the fact that combat flying is a grim and dangerous business. If our only interest was flying safety in the United States, we would have every man fly a primary trainer on sunny days, and we could cut the accident record to almost zero. If we stopped flying and put the airplanes in hangars we would have no accidents at all. But war is not fought that way. From the outset, the Army Air Forces have taught the men at home the maneuvers that they would execute in combat abroad. In these maneuvers a few are bound to be injured or killed, but the overwhelming proportion of the men are better prepared to defeat the enemy.

While still training in this country our pilots are taught formation flying. Formation flying demands a great deal of the men, and collisions in training will inevitably occur, but in combat a tight formation is often the airman's best protection.

There has been an increase in the *numbers* of airplane accidents, but not out of proportion to the tremendous increase in the *numbers of men now flying*. The number of men now in training in the air every day is well over 120,000, approximately equal to the population of Camden, New Jersey, or Savannah, Georgia. It is twenty-five times as many people as were in the air in this country five years ago. During the fiscal year 1943 the Army Air Forces flew over 3,352,000,000 miles, which is equal to 134,000 trips around the world. This figure is domestic flying only

—it excludes overseas or combat flying which has also increased greatly.

Despite the tremendous expansion of Army Air Force flying, the rate of accidents per 1,000 hours flown did not increase as anticipated in the fiscal year ending June 30, 1943, but was, in fact, reduced fractionally from .739 to .716. This rate of accidents was lower than the average rate for the ten peacetime years of 1931-1940, although more than three times more miles were flown last year than in the whole preceding twenty-year period. As a result of the increased proportion of larger and heavier planes carrying more personnel, of faster military aircraft, and of newly trained pilots, the rate of fatal accidents was up fractionally from .077 in 1942 to .083 for the full fiscal year of 1943. The trend near the end of the year was downward and in the last quarter the rate was below that of 1942.

This record has been achieved despite the pressure of war-time training, and the fact that with our tremendous expansion, the experience level of our fliers was bound to be low. The Army Air Forces use every means to teach accident prevention, such as films, lectures, books, posters, and periodic tests. Safety officers test flying equipment under all conditions, study take-offs, landing, weather conditions, airport clearances, and the like—even matters of fliers' diets are studied and the information used where applicable. Every accident, however trivial, is investigated and the findings used to prevent future accidents.

Basically, the accident record is good. Ninety-five out of each one hundred Army Air Force pilots in training can be expected to fly through the next twelve months without a scratch.



# Legal Aspects of Treatment of Prisoners of War

MAJOR J. W. BRABNER-SMITH, *Corps of Military Police*  
Chief, Legal Section, Office of the Provost Marshal General

**W**ORN copies of the Geneva Conventions of 1929 and ingenious and properly directed arguments concerning the rights of prisoners of war under international law suggests that the most assiduous group of legal scholars in this country today are our Italian and German prisoners of war. When it was rumored last year that prisoners might be put to work picking cotton, the objection was immediately made, through proper official channels, that, since cotton is used in gunpowder, this has a "direct relation with the war operations" and so violates Article 31 of the Prisoner of War Convention, which prohibits that use of prisoner of war labor! When assistance of prisoner of war labor recently was requested to help the lumbering industry, the Legation of Switzerland, the designated "protecting Power," was at once duly advised by numerous prisoners that this would be "unhealthful or dangerous work," which is forbidden by Article 32 (an effort to condemn an entire industry because certain occupations in it are dangerous).

What "rights" and obligations have these prisoners, and why should this country observe an "international law" with respect to them? There is a great deal of popular sentiment that international law is "hokum" and that the Nazis or Japanese ignore it at pleasure. The fact is that immediate expediency alone does *not* determine the limits of recklessness to which a nation will go in the conduct of war. Experiences of recent wars indicate conclusively that even those nations considered most barbaric and cruel will observe certain standards of civilized countries in the conduct of war. Japan, in the Russo-Japanese War, carefully checked the credentials of captives to determine whether they should be classified as combatants and so entitled to the privileges accorded captured combatants by international law. The production of proper identification unquestionably saved the lives of many Russians, even if their treatment was not in full compliance with the then established customs of warfare.

*History of Conventions.*—In early times, as we learned from the Bible, and as we know from Ancient History, prisoners of war had *no* rights—they were fortunate if they were allowed to live the remainder of their lives in slavery. But few of us realize that the custom of nations concerning prisoners of war, as first set forth by Grotius in 1625—"the right of killing . . . captives taken in war, is not precluded at any time"—was not denied by law or regulation of any nation until our Civil War. It was an American professor of international law, Francis Lieber

(whose son became a distinguished Judge Advocate General of the Army), who drew up the first official code of international laws of war—General Orders No. 100, of 1863, "Instructions for the Government of the Armies of the United States in the Field." Reports of needless destruction of Southern property by Union troops had been received, and the Confederate Government had threatened to execute Union prisoners in reprisal if captured Confederate soldiers, who had been dressed as civilians and sent to commit sabotage within the Union lines, were executed, instead of receiving the "rights of combatant prisoners." As a result, General Halleck, the authority on international law, then General-in-Chief of the United States Army, ordered Lieber to prepare instructions for his officers on the rules of land warfare. The resulting code was the forerunner of the Army's present Field Manual, FM 27-10, Rules of Land Warfare, which first appeared in 1914. A great part of Professor Lieber's code was adopted at the Hague Conferences of 1899 and 1907, where the modern international law of warfare was for the first time codified by representatives of nations.\* At these Conferences "Regulations Respecting the Laws and Customs of War on Land" were drafted, and a "Convention" was concluded which provided for the issuance by "the High Contracting Parties" (the ratifying countries) of instructions to their armed land forces in conformity with the Regulations. These Regulations contained general instructions on treatment of prisoners of war, on means of injuring the enemy (for example, the prohibition on attack of undefended cities), on spies, flags of truce, capitulation, on military authority over hostile territory, and on the internment of belligerents. When the first World War commenced, there was also international law concerning the treatment of wounded and sick of armies in the field—the Red Cross Conventions of 1864 and 1906, which had been adopted by many nations.

In 1929, as a result of the experiences of the World War, the Geneva Convention "Relative to the Treatment of Prisoners of War" was drafted to enlarge upon the provisions of the Hague Regulations concerning prisoners. This Convention was ratified by all of the present combatants except Russia and Japan, and Japan agreed with this country, after Pearl Harbor, to follow the treaty "so far as applicable." At the same time, the Geneva Convention

\*See Scott—Hague Conventions of 1899 and 1907 (1918); Cowles—Recent Practical Aspects of the Laws of War, *Tulane Law Rev.*, Oct. 1943, for a further discussion.

for "the Amelioration of the Condition of the Wounded and the Sick of Armies in the Field"—the 1929 Red Cross Convention—was drafted to supplant the 1906 Red Cross Convention.

The Prisoner of War Convention states who are "prisoners of war" and regulates in detail their capture, care, food and clothing, internal discipline and punishment, labor and pay, external relations, representation, prisoner information, and termination of captivity. The Red Cross Convention concerns the treatment of wounded and sick of armies in the field, and the rights and privileges of medical and sanitary personnel, chaplains, and other "protected personnel," both in combat and as prisoners. Changes in these Conventions may be made by mutual agreement between warring nations. For example, by special agreement this country pays German and Italian officer prisoners from \$20 to \$40 per month (Japanese, \$15 to \$35), depending on grade, with the implied understanding that the balance will be paid to the captive's dependents or to himself by his own country. (Article 23 provides that a captive officer will be given the same pay granted to officers of the detaining Power, but no more than he receives from his own army, such payments to be reimbursed by the enemy country at the end of the war.)

*Translations.*—The only official texts of the Conventions are in French, and the translations have occasionally resulted in acrimonious legal arguments. For example, "*Les arrêts sont la peine disciplinaire la plus sévère . . .*" is translated, "arrest is the most severe disciplinary punishment" which may be imposed on a prisoner (Article 54). "*Les arrêts*" implies "confinement," whereas "arrest" may or may not have this implication. Prisoners at first positively asserted that they could not be confined as disciplinary punishment. Even in the official version of the Geneva Conventions there is not complete clarity on several matters. An official record of the debates ("*Actes de la Conférence Diplomatique*," 1929) has been published, which is of very considerable assistance in determining the intention of the conferences. Unfortunately, this has not been translated into English.

*Status of Prisoners of War.*—The Prisoner of War Convention discusses at length the status of prisoners of war and the penalties and punishments applicable to them. They are not to be considered as in the power of the individuals or of the military units which capture them, but of the capturing nation itself. Every prisoner must at all times be humanely treated and protected particularly against acts of violence, insults, and public curiosity, and measures of reprisal against them are prohibited (Articles 2 and 3). It is for this reason that a prisoner's face may be blocked out in a newspaper photograph. It is recognized, however, that certain measures of administration and discipline are essential for proper camp maintenance. It is provided that every camp

shall be placed under the command of a responsible military officer (Article 18), and that all regulations, orders, and notices must be communicated in a language which the prisoners understand (Article 20). Prisoners are to be subject to the laws, regulations, and orders in force in the army of the detaining Power and, accordingly, acts of insubordination are to be punished in the same manner (Articles 45 and 46). However, it was realized that army standards of punishment in some countries might be too severe, or might be too harshly applied to enemy prisoners; therefore, certain specific limitations upon punishment are set forth in the Convention. Among such mandatory limitations is the provision that confinement (*les arrêts*) not exceeding thirty days is the most severe disciplinary punishment which may be imposed. (See Article 54.)

*Judicial and Disciplinary Punishments; Administrative Measures.*—Three types of action against insubordinate prisoners are available to the camp commander to effectuate his responsibility to utilize and control prisoner of war labor, and to administer and maintain his camp in a satisfactory manner. Prisoners of war are subject to punishment by "*judicial proceedings*" for violation of military law (Article 45), as well as for violations of local criminal laws (for example, the theft of an automobile by a prisoner attempting to escape) (see Article 51). While it is necessary to punish prisoners of war in cases involving crimes or serious insubordination, punishment by judicial proceedings has its disadvantages in less serious offenses, because no such proceeding may be directed against a prisoner until notice has been duly furnished the protecting Power (Article 60), which takes at least three weeks.

The essential difference between judicial proceedings and disciplinary punishment in international law is the degree of punishment. In general, in armies throughout the world, if a punishment of thirty days' or less confinement is warranted this is effected by disciplinary proceedings (some countries have a slightly greater maximum for disciplinary punishment); otherwise, by judicial proceedings. Since there are no limits to judicial punishment the Convention safeguards a fair trial (Articles 60-67). Disciplinary punishment does not have these safeguards; international law here protects the prisoner by restricting the punishment (Articles 54-58), and by providing that only camp or detachment commanders, higher military authorities, and courts may impose disciplinary punishment (Article 59). It is a peculiarity of our military law that, where disciplinary punishment is to be imposed under the 104th Article of War, the accused may elect to have a court-martial trial (ordinarily considered a "judicial proceeding"); and that jurisdiction of one of our military courts, the summary court-martial, is limited to the "disciplinary punishment" of international law.



Disciplinary action is so restricted that it has proved no deterrent to certain offenders. In some camps there have been, occasionally, concerted "sit-down" strikes, either to obtain unusual privileges or to test the mettle of the camp commander. Experience has shown that the good old-fashioned remedy of *administrative measures* is often the most effective way to combat that petty insubordination which can disrupt the entire camp administration. Whether the prisoner is refusing to work or to comply with the necessary provisions for camp administration, such as turning off the lights at a certain hour of the night or maintaining quarters in an orderly condition, the "no work—no eat policy" has generally proved effective as an administrative measure. In one camp, swastikas were being painted in every conceivable place. The camp commander announced that the mess hall would be opened for breakfast as soon as the swastikas were removed. The swastikas were removed and the practice ceased abruptly. Within our own army, provisions that firearms must be cleaned before passes will be issued, that personnel will not appear for meals unless properly dressed, that troops will not be paid until barracks have been inspected and approved, and discrimination as to selection for less agreeable duties, are common forms of administrative measures. At one time in our army, the use of summary courts-martial for disciplinary punishment became so excessive that the War Department stated that trifling delinquencies "will in a great measure be prevented" if the commanding officer will fulfil his duty to prevent such occurrences rather than to punish them. The deprivation of privileges as a preventive measure was recommended. Some discussion has taken place whether the withholding of an allowance or of a meal from a prisoner of war until he performs his designated duty is, in effect, a form of disciplinary punishment, forbidden by our army regulations. (Cruel and unusual punishment, AW 41; forfeiture of pay, AW 104.) Such action is punitive only if it continues *after* compliance has been obtained. Of course, if the prisoner of war remains recalcitrant over a considerable period of time, his conduct becomes a serious case of insubordination, justifying a court-martial and the imposition of a severe penalty. But the mere withholding of an allowance or a meal, while the prisoner is failing to do what he is required by international law to do, is a recognized means of preventing insubordination and of effectuating efficient camp administration.

*Collective punishment* (the punishment of a group for the misdeeds of individuals) of all kinds is prohibited (Articles 11 and 46). Punishment of each individual for his own insubordination does not become "collective" punishment even if it involves every prisoner of war in a camp. "Punishment" includes "judicial" and "disciplinary" measures and not "administrative measures"; therefore, although

the swastika incident mentioned above is "collective" action, it is an "administrative" measure permissible under the Convention.

*Work.*—Prisoners who are privates may be required to work, if physically fit; noncommissioned officers may be required to do supervisory work only; and officers and noncommissioned officers may be permitted to perform any type of work if they so request (Articles 27 and 29). Their work may be connected with administration of the camp, in which case no wages will be received. The work may be for private persons or on public projects, for wages (Article 34); provided the work (1st) has no direct relation with war operations, such as manufacturing and transporting arms or munitions (Article 31), and (2d) does not involve "unhealthful or dangerous work" (Article 32). The treaty is not clear whether a subjective or an objective standard is intended in the latter case. Work which is generally considered "dangerous" may not be considered dangerous by a person who is trained in that work, and may not be dangerous to that person. For instance, a person who is skilled in blasting would not consider this to be dangerous work. In any event, it is reasonable to assume that the delegates to the Convention did not contemplate that an entire industry, such as mining, lumbering, or farming, might be classified as dangerous solely because particular occupations within the industry might be dangerous to those who are not trained in the occupation.

There are about 200,000 prisoners in this country, and, since labor is at a premium, the problem of the War Department is not to find work but to provide adequate guard forces to prevent escape of prisoners while at work. At the present time, only a few have escaped and only one has not been recaptured within a short time.

*Termination of Captivity.*—The Prisoner of War Convention provides that, when belligerents conclude a convention of armistice, provision must be made for repatriation of prisoners of war, and, in any case, repatriation is to be effected "with the least possible delay after the conclusion of peace" (Article 75). A prisoner of war does not cease to be such merely because his country surrenders unconditionally or otherwise terminates hostilities. Many people in this country expected that Italian prisoners in this country would be released at once when Italy surrendered. This actually might have been a great hardship to the Italian prisoners. In any event, our Government is responsible for these prisoners of war until they are returned to their own country and officially released to their Government, unless a satisfactory arrangement is made with Italy for the release of these individuals in this country. Since all of our transportation resources are now required to transport troops and war matériel, it will probably be some time before any of these prisoners can be returned to Italy.



# "G-3, Submit Recommendations by 1500 for --"

LIEUTENANT COLONEL JAY C. WHITEHAIR, *Cavalry*  
Instructor, Command and General Staff School

*The following article, with minor changes, is based on a conference entitled "Analysis of Tactical Problems," presented to the General Staff Class at this School.*

*It has been found that many officers with little staff experience are somewhat dumbfounded when faced with a rather elaborate "situation," and are told to study it, evaluate it, and submit recommendations based on it by a certain time.*

*The article is published here to illustrate a method of approach being used in the School, and as a possible help to those in the field who have not yet evolved their own technique.—THE EDITOR.*

**I**N ANALYZING any tactical problem, there are two principal tools which we may use; namely, experience and imagination.

Let us first take the matter of experience and break it down further into two headings, practical and theoretical.

Practical experience can be of tremendous help in studying any particular problem. It is a comforting thing to know that the situation which is confronting us is somewhat like some situation which we have actually seen at a previous time. Furthermore, the results of practical experience are easily retained because they are usually tied up with personal happenings which make them easier to remember. However, there are certain disadvantages to using practical experience alone in the solution of a problem. Our background may have been too narrow; or perhaps techniques have greatly changed, which certainly makes our background of less value. So we attempt to augment our practical experience by study of other men's experiences. Perhaps we can give this the name-tag of "theoretical experience." There is one advantage to this type of knowledge, in that it is readily accessible. It can be based on study and discussion. It might be mentioned here that there are no finer texts in the world than those that are available to us for this study, but this type of knowledge is not as easily retained. The difficulty is that it *must* be retained to do us any good.

If it were possible, we would attempt to classify our theoretical experience and place it in our "mental file," where we could withdraw the necessary information pertaining to any particular subject as needed; but when we consider the tremendous amount of material that it is necessary to assimilate to keep abreast of today's changing techniques, we can realize that some type of aid is necessary. Note-

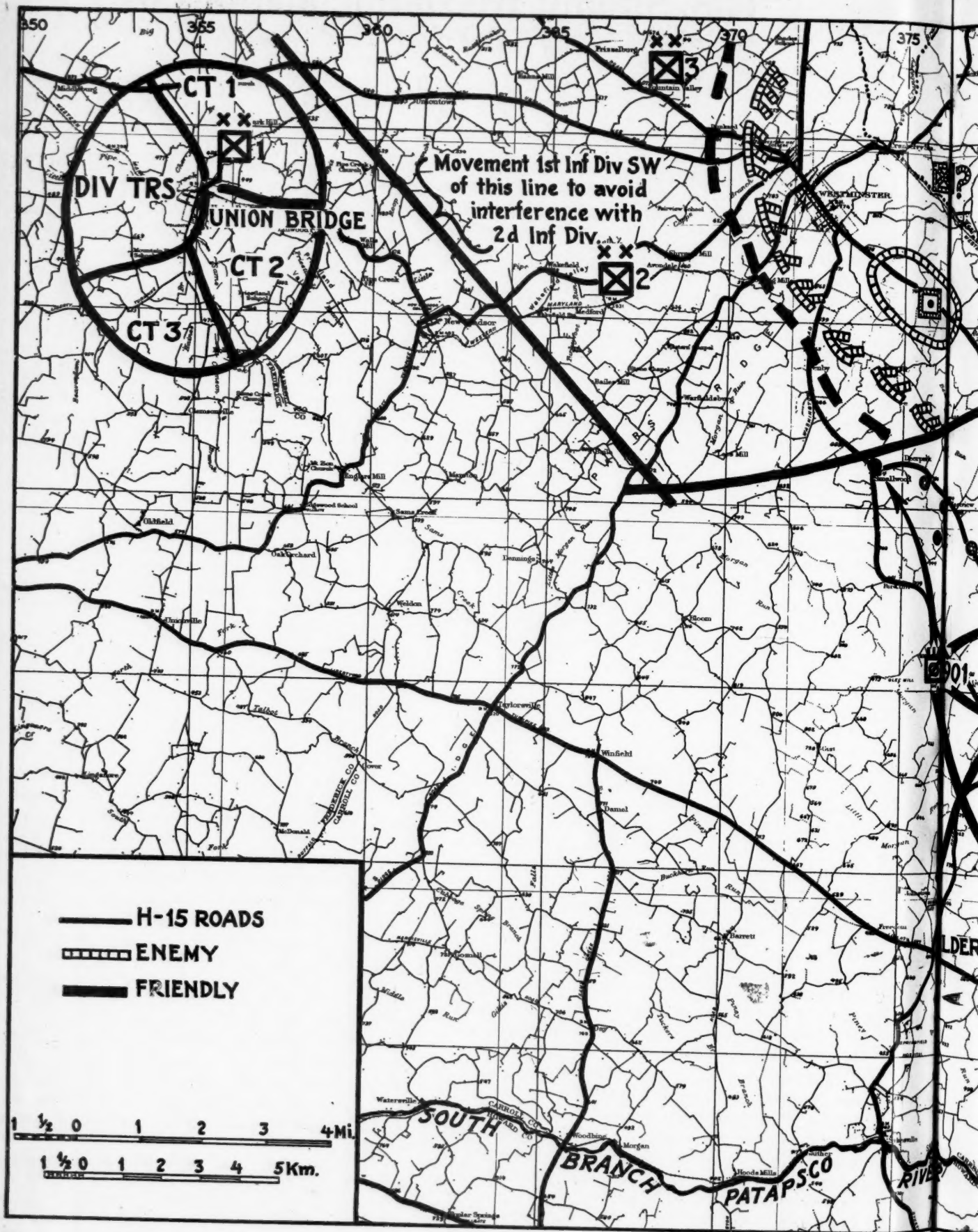
books can often be used to bridge this gap to the proper classification in our "mental file."

There is probably no standard type of notebook which is equally valuable to all officers. Some officers find that a notebook containing references to paragraphs in Field Manuals is helpful, along with notes as to where other bits of information can be found; but a caution on this: the Field Manuals may not be available when the information is most badly needed. Other officers prefer a pocket digest type of notebook, in which bits of information have been collected. With this type of notebook, it is necessary that only that type of information which is most likely to be frequently needed be collected; otherwise one may find that reference to the notebook may bring out information which has become obsolete, and which may cause serious mistakes.

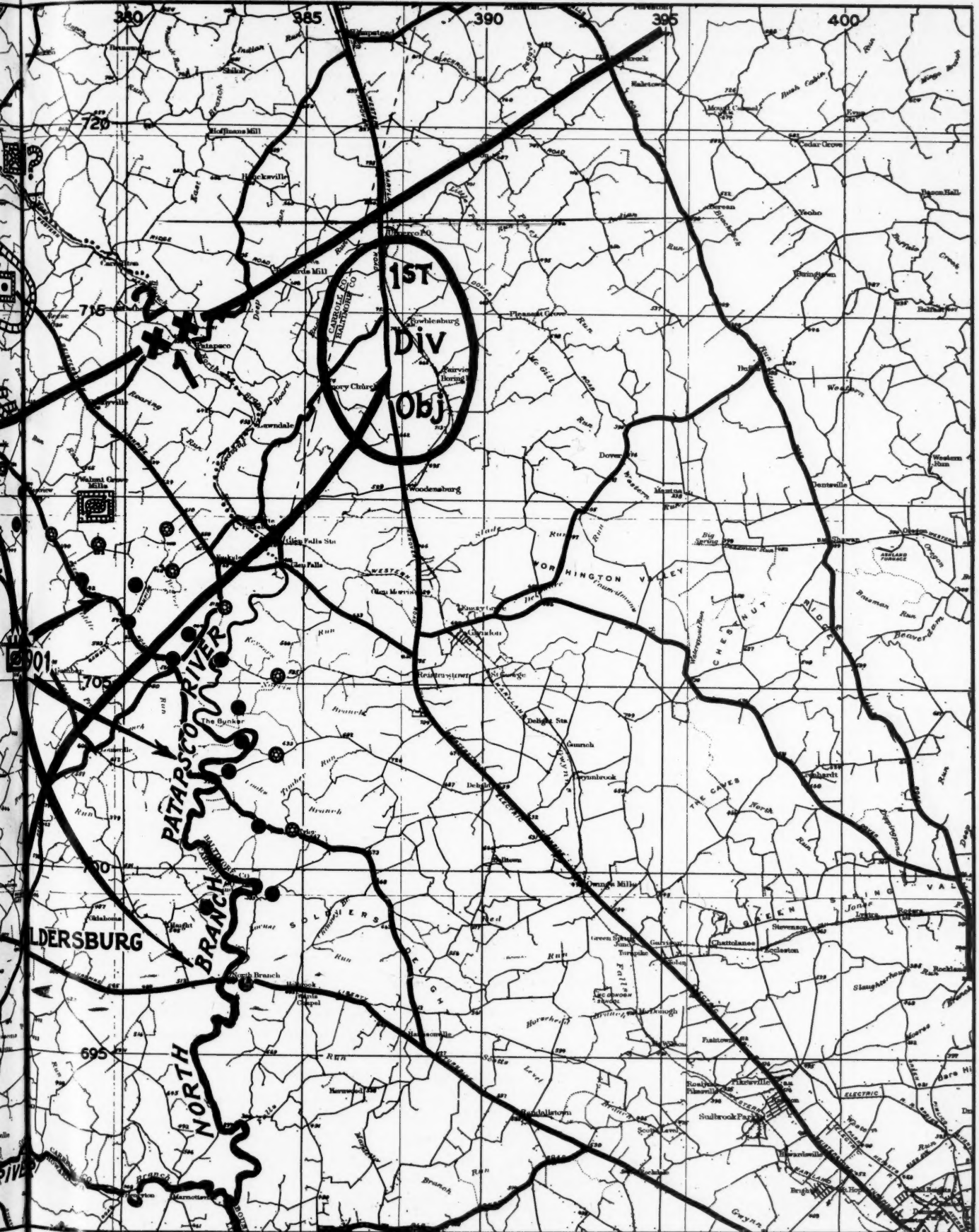
The analysis of a tactical problem also requires imagination, but we must not let this go too far. We must temper it with logic. What we really need is the ability, based on practical and theoretical experience, to place ourselves in a situation, and project it into a logical future. In a word, we must actually "live" the problem. We must picture ourselves as being in the very center of it. It is absolutely fatal to try to fight the problem and wish that the situation were something different—or curse the gods that brought about such a confusing situation.

One of the first things that we must do is to analyze the situation as it exists at the present moment. If we are working from written material, there are certain aids that we may apply. For example, we may underline information pertaining to enemy with a red pencil, and underline information concerning friendly troops with a blue pencil. Perhaps it will be worth while to underline times and details with a green pencil in order that they may stand out. One extremely important thing is to mark our *mission* in such manner that we will always be able to find it quickly, for everything that we do or think must be based on this mission. We must remember that even a Napoleonic solution has no meaning if it does not accomplish our assigned mission. So perhaps it would be advisable to underline our mission with a heavy pencil, and put a large asterisk in the margin next to it. It may be helpful also to underline the mission of the next higher unit and perhaps put a double asterisk next to it, so that we may easily see whether or not anything that we are doing will interfere with the mission of the major forces.

Next we have to consider the time element—as it









will do us no good to work a solution if we are not able to submit it in time to be used. Budgeting of our time will help here. For example, if we have a hundred minutes in which to prepare a solution, we might use fifteen minutes for reading and staking out the situation, and perhaps forty-five minutes for our mental solution and scratch notes. We may then figure twenty-five minutes for writing the solution, which would leave us fifteen minutes for re-reading, testing, and checking. We must think of these times as only a guide, and not as hard-and-fast rules. They are merely an attempt to keep each part of the solution in its proper perspective.

Let us apply some of these rather general comments to a specific situation.

#### SITUATION AND REQUIREMENT

##### 1. SITUATION

a. Maps.—Situation Map (see pages 48 and 49).

b. Our I Corps, consisting of the 1st, 2d, and 3d Infantry Divisions, is engaged with a hostile force estimated to be two infantry divisions with some reinforcements.

The 901st Cavalry Regiment (mechanized) is maintaining surveillance of the corps' south flank, and is reconnoitering to the east and northeast. The 1st Infantry Division is in concealed bivouac in the Union Bridge (355-715) area.

c. The 1st Battalion 902d QM Regiment (truck) is attached to the 1st Infantry Division at Union Bridge at 2000.

d. Directive, 1st Infantry Division.—At 1300, 10 Feb, at the Division CP at Union Bridge, the Chief of Staff took the following notes from the directive of the Commanding General, 1st Infantry Division:

"Corps Atks early tomorrow, enveloping enemy S flank (Map).

"1st Div moves tonight by combat teams by motor to vicinity ELDERSBURG (375-695), prepared to Atk on Corps order.

"Formation for the Atk: 1st and 2d Inf abreast, 2d Inf on right. Div Res: 3d Inf.

"Arty: Div control effective arrival assembly area.

"901st Cav Atchd 1st Inf Div at once, from present position screens movement Div. When passed through by Div, continue surveillance S flank, reconnoiter E and NE.

"Submit recommendations by 1500 for movement and Atk."

2. REQUIREMENT.—Stake out problem on map or overlay in order to form the basis for your G-3 recommendations.

#### NOTES

(1) 1st Bn 902d QM Regt (Trk) provides enough trucks to motorize the division.

(2) The "Division Troops" require H-15 roads (those on which the bridges and culverts will support 15 tons).

(3) Daylight begins at 0530; darkness at 1900.

Now there is our situation. Let us see if we cannot transfer it to a piece of scratch paper in the form of a simple diagram so that we can get the various elements reduced to their simplest factors.

#### THE PROBLEM

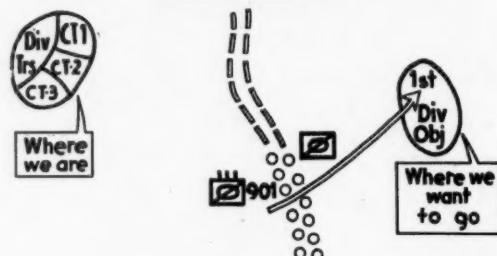


FIGURE 1.

Here we have a diagram (Figure 1) which presents a picture worth a thousand words. It tells where we are and where we want to go. Now the first thing that we must think of is what tools are available to accomplish our mission. Here we must turn to our

#### G-3 CHECK LIST OF UNITS

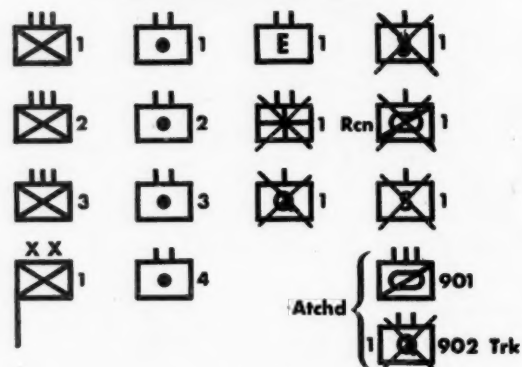


FIGURE 2.

check list of units (Figure 2). This list includes all of the organic units within the division and the attached units, which must receive specific orders for the accomplishment of our mission. As G-3, we are able to check off certain ones of these units at the very outset, because they will be receiving their orders from someone else. For example, the Administrative Order (or perhaps G-4 will issue fragmentary orders) will take care of the movement and location of the Medical Battalion, the Quartermaster Company, the Ordnance Company, and the attached Quartermaster Battalion. The Signal Company will probably operate under separate orders; and we can assume that we have talked to G-2, who will issue orders to the Reconnaissance Troop. So with the exception of coordination with the other staff officers in regard to the above-mentioned units, our only worry will be concerning those units which have not yet been checked off.

We now know what our problem is and what we have to do it with; but the next situation confronting

us is where to start. It is something like the problem of digging a ditch a mile long. At which end shall we start, or shall we start in the middle? This brings us to a name-tag that can be found very useful, which we may refer to as "*backward planning*"; in other words, deciding where we would like to wind up and then working backward, so that each step will aid the one we have just planned. Needless to say, there are exceptions to this method of procedure, as, for example, when speed is the greatest problem; i.e., we are faced with a situation where we must move at once—perhaps by reason of daylight overtaking us in an unfavorable location, or a hostile threat coming our way when the terrain is not suitable for our action. In the present situation we are not faced with these last two considerations, so let us start with the attack itself and work backward from there.

The Division Commander has indicated the direction of our main effort by the arrow which was placed on the situation map, and has also indicated the formation in which we are to attack. We must now study the terrain, and decide which regiment shall make our main effort. Since the two regiments in the attack will be advancing abreast, it is necessary that we place a boundary between them—so we must add this to our diagram. It is also necessary that they be given a full line of departure from which to attack. A short terrain study shows a road in the rear of the cavalry line of contact which may be useful, so let us add that to our diagram. The Division Commander has instructed us to put the 3d Infantry in reserve. At the moment all it will be necessary for us to do is to locate an assembly area for this regiment, and make a note to issue orders later to comply with the directive.

Perhaps we are fairly well set now on our scheme of maneuver, so let us study the terrain further and locate assembly areas which our combat teams can

#### THE SCHEME

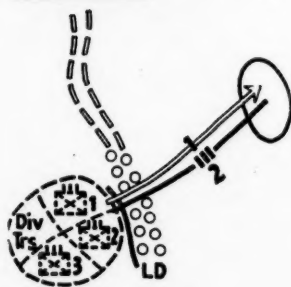


FIGURE 3.

occupy, which will be convenient for their approach to the line of departure. By this time we have increased our diagram to a point where it looks something like Figure 3.

Our next problem is to figure the ways and means of getting the combat teams into these assembly areas, so we go back to our map study again and pick routes for our various units. It might be mentioned

here that in many cases it may be more advantageous to assign zones for the movement forward; however, in this case, by way of illustration, we will pick definite routes for our recommendation, remember-

#### THE MOVE

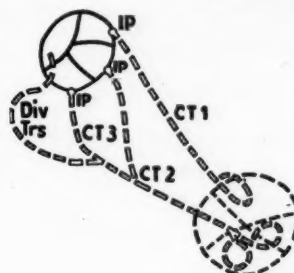


FIGURE 4.

ing that the Division Troops need H-15 roads on which to travel. Perhaps it would also be advisable to mark turn-arounds in the forward area. If there is no possibility of confusion, this would probably not be a necessity. Also we must decide on IP's (initial points) so that each organization will know at what point to start its time and space measurements. This particular diagram that we are working on now might be either a part of our first diagram, or perhaps it might be a small separate sketch like Figure 4.

Now we must actually compute the time and space calculations for this movement. In other words, we must find out how far each unit has to move, add to that the time length of the column, and consider the time necessary to issue orders, assemble trucks, load the men and equipment, and unload and take cover in the forward area. We will not go into these details here, as they are purely a mathematical problem.

But we are immediately faced with a problem of interference. We must ask ourselves whether or not the columns will interfere anywhere; and the obvious answer is that, if all of the units were to start at one time, we would have a tremendous amount of confusion on our southern route. Then we begin to wonder whether or not a march graph may be necessary for planning the march; but on closer study we find that there are really only two points of interference, and that perhaps we can visualize the movement without the aid of a march graph. Nevertheless, it is obvious that we must have some control to prevent this interference. So we must make a decision as to whether or not to issue a separate march table or merely to issue control "remarks" in the Field Order. For example, we might include in the Field Order the following: "2d Combat Team clear IP by 2100." And perhaps issue another order to the 3d Combat Team giving it as the earliest allowable arrival time at its IP, a time that would be late enough to prevent interference with the 2d Combat Team.

This is a good time to stop and check our figures again, as any time spent now in checking will save

us a tremendous amount of time after our solution has been completed—for an error which we may find at that later time may completely change our whole plan.

We have now completed the general plan for our major elements, including the scheme of maneuver and the movements to the assembly area from which the attack will be launched.

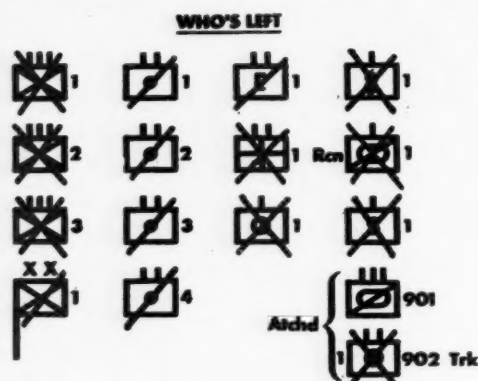


FIGURE 5.

Perhaps it is time that we look again at our check list and see what remaining units we must consider (Figure 5).

We now notice that the Division Commander ordered that the division move as *combat teams*.\* This means that we have arranged for the movement of the artillery to the forward area, so we can partially check off the four artillery battalions; but on closer study, we find that the Division Commander has ordered that the artillery cease to be attached to the infantry regiments upon arrival in the assembly area. This means that we must consult the Division Artillery Officer to get his recommendation as to the area in which he wants the artillery to be placed.

When we made arrangements for the movement of the Division Troops, we included the Engineer Battalion and the movement of the command post—so we can also partially check these two elements. In fact the command post may be moving with one of the combat teams, but we have not yet provided for its location in the forward area. So we must talk to the G-1 and the Signal Officer regarding recommendations for this location; and then leave it to the Chief of Staff to make the final decision, as a result of the Commanding General's direction. Perhaps it would be advisable for us to talk to the Engineer Officer, and see what he advises in regard to the use of the engineers during the attack.

We have not yet made any plans for the 901st Cavalry; however, that should be fairly simple because

\*When infantry regiments have their companion field artillery battalions attached to them, they are known as combat teams. When the field artillery battalions are no longer attached to the regiments, even though they may be supporting the regiments by fire, they are known as "under division control."

the Division Commander has indicated in his directive what use he wants made of them.

Now let us assume that we have been able to discuss these details with the proper officers; and let us

### THE DETAILS

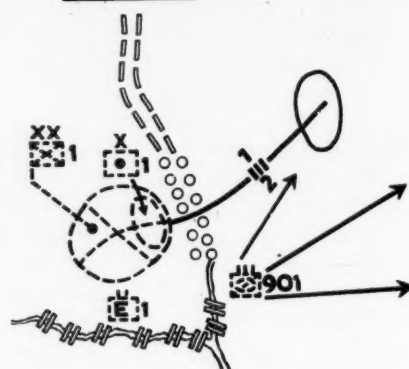


FIGURE 6.

take the notes that we have obtained from them, and either add them to our previous diagram or perhaps make a little separate sketch like Figure 6.

The Artillery Officer has indicated the area in which he wants to place the artillery battalions. The command post has been located. The Engineer Officer has recommended that the bridges and fords across the river on our south flank be prepared for demolition, and we have merely indicated on our sketch by arrows the mission of the 901st Cavalry.

### THE JOB

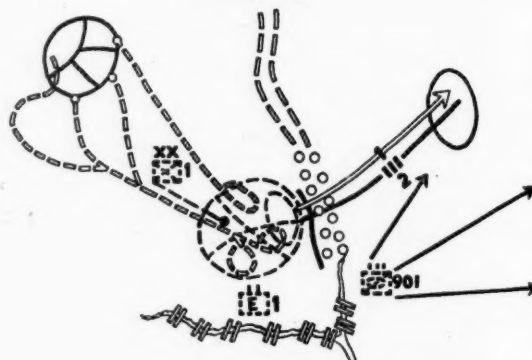


FIGURE 7.

Now let us consolidate all of our previous diagrams into one over-all picture (Figure 7). This may then be either transferred directly to the map or placed on an overlay, accompanied by our scratch notes which we will have reduced to definite recommendations. Included would be such items as the control measurements which we indicated earlier, and additional recommendations regarding security, artillery fires, secrecy, liaison, and other items pertaining to individual elements of the command. The purpose of these written notes is to explain any parts of our recommendation which we have not been able to show diagrammatically.

But before we present our recommendation in its



list (Figure 8) and by referring to our notes and our diagram ask ourselves whether or not we can actually

Next, let us look at the requirement again. Do the recommendations which we propose actually fulfil the requirements? Will our solution execute the mission? Considering the capabilities and limitations of each of the individual units, can we say truthfully that the plan works? Is it simple? There is no place in warfare for complicated plans. The confusion which takes place on the battlefield itself renders a highly complicated plan useless by reason of the probability of the breaking down of any one part. Is it legible? Is our solution correct as to form?

If we can answer "yes" to each of the above questions, then we are ready to present it to our superior officer.

[Translated for the Command and General Staff School, Fort Leavenworth, Kansas, from a German article in *Der Angriff*, Berlin, Germany, 9 July 1943.]

GERMAN Red Cross aides from Soldiers' Recreational Centers of the rear areas have just pulled in with a sort of "summer resort on wheels," a mobile canteen bringing something suitable for everyone's taste—a bit of Upper Bavaria, a touch of Tyrolean music, and for the city lad, "five o'clock tea" with cakes and cordials served at linen-covered tables!

The trailers of the Red Cross aides of the first motorized soldiers' canteen move in close behind the front lines, from division to division. Two companies are received as guests ever day.

The specially constructed vehicles of the canteen are parked beside each other: the "day room," the kitchen truck, and three canteen trucks, each so snugly arranged that it would charm the heart of any housewife. They were built by supply troops in 6,000 hours of their own time.

As one approaches, one discovers the bright faces of the Red Cross aides who have prepared everything to receive us. It really warms the soldier's heart. His mouth begins to water as he sees how the plates are filled.

Violins play in the sunshine and heavy army boots beat out the time. The Army Variety Show has begun its performance. The Music Hall clown plays on empty glasses, and behind the colorful and bedecked "décolleté" of the "Sarah-Leander Imitator" hang the suspenders of field-gray trousers. Here soldiers act for soldiers, and salvos of laughter reach the tent in which the Red Cross aides are setting the coffee tables.

Naturally, all have become thirsty again and are happy that they are being waited upon. The Regimental Band plays the proper flourishes in front of the tent, and then the "Battle of the Cakes" begins. For a moment one must hide his emotions because of a lump in his throat, for there are white-covered tables with flowers on them—here, close to the rifle pits!—that's something that has never been seen before. Coffee in real cups, and for every one of the 270 men, two pieces of cake on glass plates—"home baked cake," as the Red Cross aide says. It's like a fairy tale!

Then come a thousand quarts of beer and the rolling of the barrels makes even the card-players prick up their ears, as well as many a fellow who, in spite of the drums and trumpets, has been taking forty winks in his steamer chair.

Behind the door of the "day room" is a small lending library whose books soon go the rounds of the dug-outs. It is striking how many serious, thoughtful books are sought after.

Gin, beer, egg-bread, and cigarettes! "A man must have three hands to take care of this," says a mountain infantryman as he begins his last glass of beer before going back to the position.

The day comes to an end and farewells are spoken. One can hear everywhere: "When shall we see you again?" The German Red Cross aides have a consolation for them: "Other motorized soldiers' canteens are under construction—we were the first ones, and have come out here ahead of them!"

# How to Win Wars by Ground-Air Cooperation

MAJOR EDWARD L. JENKINS, *Air Corps*  
Instructor, Command and General Staff School

RATHER a broad statement, isn't it? Is there a method whereby we can apply a formula, shake well, pour in equal portions, and come out with an answer that provides us with infallible victory? The question answers itself—"Of course not." Then why such a title? The answer can confuse the issue still further—to tell you something you already know.

The author does not presume to tell you anything new, but asks whether you as an individual apply that which you already know about cooperation and coordination to as large an extent as necessary? It is old stuff, isn't it? The most important book of all times stresses it in another way in St. Matthew, Chapter 7, 12th verse, which says, "Therefore all things whatsoever ye would that man should do to you, do ye even so to them; for this is the law and the prophets."

Think it over, you in the air forces and you in the ground forces. Do you as an air man understand what your team-mate, the ground man, is trying to do? Can you help him? He is fighting the same war as you. And you as a ground man—if you help the air man, don't you also help yourself? Has either of you ever made an attempt to find out what problems the other has, or do you wait until he asks for something and then immediately answer "No" without ever considering that you hurt yourself and deny each other help that each of you needs badly?

Apply the principles of cooperation and coordination in their most strict meaning and see for yourself how they can influence the outcome of any battle or campaign. General Montgomery writes: "All that is required is that the two staffs, Army and Air, should work together at the same headquarters in complete harmony and with complete mutual understanding and confidence." At another time he said: "We cannot fight successfully on land without the closest cooperation of the RAF. We cannot get this cooperation in full measure and without interruption unless we are active in securing airdromes and landing grounds, and unless we ensure that these are at all times adequately protected against ground or air attack. Therefore, this factor must be kept to the fore in our planning." Air Marshal Coningham must have been thinking along the same lines when he wrote: "Both commanders work together and operate their respective forces in accordance with a combined Army-Air plan, the whole operations being directed by the Army Commander."

Both General Montgomery and Air Marshal Con-

ingham are fully aware of the interdependence of the two arms. They have practiced and made a part of their thinking the cooperation and coordination of which they write. They recognize that the other has problems of his own that each of them may be able to help solve. They include in their own planning methods and means whereby they can help each other. They prepare their plans in accordance with the advice of the other. This, then, is the magic formula which if correctly applied will assist in influencing the outcome of any engagement and thus reflect itself in the winning of the war.

If the application was as simple and easy as it appears on the face of things there would be no occasion to discuss the problem, much less write an article about it. But you and I know it isn't so easy. There are complications that arise. The person with whom you may be required to work is a "so-and-so," and it is impossible to get any help from him. Then let's apply the formula and see if it works—if it doesn't, have you lost anything? Any gambler in the world would jump at the chance to make such a bet. You invest nothing but a little of your time. The stakes?—the stakes entail such proportions it is impossible to predict what they will be. If you win you may win as little as one man's life—which is not unimportant to him—or you may win many lives. Will you make the bet?

We all know that failure to cooperate, failure to coordinate, failure to work together in harmony can result in just plain failure. Such a failure can be laid at the door of the individual, for it is not a mechanical failure but a personal one. Thus a personal failure again becomes a gamble with the lives of your comrades as the stakes. They wouldn't approve of this gamble, and neither would you if you were in their place. These personal failures can be eliminated—they must be—but how? By mutual understanding—that is how. It has already been done time and time again. In 1776 and again in 1812, the possibility of England and the United States fighting a war on the same side didn't have any better prospects than the proverbial snowball—but we are, aren't we? In 1865, had you been alive, would you have considered it possible for "Yankees" and "Johnny Rebs" to participate in athletics without committing mayhem? They do, don't they? When someone suggested making combat teams out of infantry and artillery units, did you think it would be so simple? It is, isn't it?

In each of the above cases, some person or persons examined both sides of the picture, concessions were

## HOW TO WIN WARS BY GROUND-AIR COOPERATION

made, and the result was a betterment and an improvement for both sides. Now again, you air men and you ground men, are you taking advantage of the opportunity to improve the situation? Do you attempt to analyze or examine each other's problems? Are you familiar with the capabilities and limitations of the other arm? The British Chief of Air Staff must have considered this when he wrote: "In this technical age it needs a life of study for a soldier or an airman to learn his own profession. Hence it is wrong for either to command the other's forces. Nevertheless both soldiers and airmen need a thorough knowledge of the capabilities and limitations of each other's Service, for this knowledge is the foundation of mutual confidence and understanding."

The chances are that very few of us have delved very deeply into one another's problems. Have you as an air man tried to determine why the ground man can't capture a landing strip as soon as you might think he could? Let's examine some of the problems which confront him. First he is concerned with his own and the enemy's strength. He must reduce the enemy's strength considerably before he can attempt to advance toward your all-important landing strip. Can you help him? Definitely yes! You can employ your aircraft against the enemy's reserves and supply installations which are out of range of his artillery. You can locate enemy reserves and strong points by means of your aerial reconnaissance. But you say that is always done—it's SOP. Certainly it may be, but are the results disseminated to your team mate? Does he know the location of these reserves and strong points which you have found? You aren't helping anyone if you keep this information to yourself. Do you know what time and space calculations he must make in order to support an attack? You can help him considerably by providing air protection over bridges or defiles which he must traverse to bring up his supplies. Are you keeping abreast of the ground situation? You can develop missions of your own if you are. Brigadier General P. L. Williams, who commanded the XII Air Support Command in the Tunisian theater, reported as follows: "With ground forces in position where air superiority had to be, and was maintained, continuous support was given to requests from ground commanders through Air Support party channels and also by setting up targets as developed by aerial reconnaissance. In this connection it is well to note that about 80% of the support missions flown were developed by air. This was in accordance with the desires of both General Fredendall and General Patton, who both stated in substance: 'Don't wait for us to order air missions; you know what the situation is, just keep pounding them.'"

One of the surest ways to insure harmony is to explain your actions. If you must deny a request, explain why it must be denied. Don't by any means

substitute an alibi, an excuse, or an apology for an explanation. Undoubtedly you are sorry you must make this denial, but see that the person who makes the request understands. If you find it impossible to grant the request, offer an alternative; see if there is some other way you can be of assistance.

You in the ground forces have indeed a more difficult job in understanding air problems. It is only natural to appreciate and understand most that which you can see. Therefore it sometimes appears that an air mission attacking a target hundreds of miles away isn't giving you very close support. An Armored Force officer once remarked that the armored units in Africa didn't receive much air support. His statement was made shortly after the time when our newspapers in this country were telling us of the heavy massed raids on Germany's industrial sections, and that Hamburg as a city no longer existed. His statement was based on visual results in a particular area. What he didn't consider was that one raid prevented the Germans from putting two and one-half armored divisions in the field against us. Isn't that air support?

It is imperative that both air and ground units understand the three priorities of targets as set up. *Understand* them—don't just know them. Here they are:

First: Achieve and maintain air superiority.

Second: Isolate the battlefield.

Third: Assist ground units to achieve objectives on their immediate front.

Now then, let's analyze them one by one and apply the accomplishments of each to both air and ground forces. First, air superiority. How does it help the ground forces? The best answer will probably be had from looking at the reverse side of things if we did not have air superiority. Picture if you will the consternation if the air is dominated by the enemy; the complications that will be present as our troops attack; enemy fighters attacking our infantry; fighter bombers attacking our supply columns, our reserve areas, and artillery positions; heavy and medium bombers hitting our supply installations, bridges, and roads; the landing of parachute troops and airborne units behind our front lines. Then look at the other side of the picture and see how much more pleasant it will be if we have air superiority and deny the enemy such unchallenged use of the air.

Air superiority makes each succeeding priority simpler for air units by allowing them to operate with less molesting on the part of enemy air units.

Second, isolation of the battlefield. The enemy's production is curtailed, his lines of communication disrupted, his shipping facilities are destroyed. He is thus pinned to the ground and cannot move into, out of, or within the area.

Third, helping ground units achieve objectives on the direct front. This is accomplished by attacking



reserve areas, supply depots, concentration points, and strong points located by aerial reconnaissance and ground patrols.

See how logically they follow one another? Do you ground men see why an air man must of necessity make an adequate preparation by accomplishing the first and second priorities before he can attempt the third? Have you tried before to understand the prior planning of air staffs and commanders?

Is such a priority system best? The answer lies in many operations already completed: The Salamaua-Lae area for one. Here the air units hit enemy airdromes, and at Wewak destroyed over three hundred enemy aircraft. This was the first priority. Next they turned their attention to shipping and disrupted sea lanes by destroying transports and barges. The enemy received almost no food, ammunition, or reserves as a result. This was the second priority. Then landings near Lae were made. Paratroopers were used and the enemy force was surrounded as air units continued to pound existing Jap installations. This action was priority number three. The results? If priority number one had not been accomplished, it is doubtful if priority number two could have been attempted. If both one and two had not been accomplished, the entire operation, even if successful, would have been tremendously more costly.

Yes, it was proven here, it was proven in Sicily, at Salerno, in the Battle of Britain wherein the Germans failed because their first priority failed. In many other cases it was proven, and in all cases it has proven most of all that this is not a complete air war nor is it a complete ground war. Each phase, each skirmish, each battle, and each campaign is dependent upon the use of combined operations. There are ground men and air men today who will tell you that the air has a separate war and that the ground is not concerned with what the air does. Never in the history of war has the occasion demanded so much cooperation and coordination.

An article appearing in the *Royal Air Force Quarterly* in June 1943 describes the situation well. It states in part: "... one thing has been definitely and clearly established; a close and permanent understanding between the soldier and the airman. It has been hard won—a marriage of true minds—with a honeymoon in Tunis. The old distrust and indifference has disappeared and in its place has come the closest possible integration of effort. No doubt there is room for improvement in detail—there is bound to be—but broadly speaking, cooperation, strategical and tactical, has been brought to near perfection. Soldiers and airmen, work side by side laying their plans. In the field the commanders live together. Before battle the soldier indicates the strong points which he expects to give trouble and the airman directs his squadrons against them."

These quotations have come from men who know

whereof they speak. Their statements have been prompted from experience in combat. They are a result of experience gained the hard way. In many instances experiences from combat theaters are accepted wholeheartedly and incorporated in training schedules. Not so this experience. Why? Because everyone has known for a long time it was necessary, but we feel we can wait to put it in practice when we engage in combat operations. This attitude is the anchor around the neck of success. Why must we wait too long before we start to learn? Why not make a part of your training program an air-ground problem? The best way in the world to know and understand each other's problems is to work together. No matter what theater you go to, you will work air-ground problems together or pay the debts which must be paid in casualties. Would you prefer to practice and make mistakes which must be paid off like this, or to practice before you leave, where you can call back a mistake and start again and where your mistakes are not capitalized upon by the enemy? Never will you have the time to schedule all the training along the lines you want, but you can see the other side of the problem by visiting the other side.

If you are an infantryman, discuss with an air man his problems. Find out what he does and how he goes about it. Learn his problems and see if you can anticipate the solution. His tactical judgment is the result of experience in air tactics which he cannot teach you in a few minutes. His technique you will find very similar to yours and readily adaptable to your plans. You will find your visit will be so interesting you will want to repeat it often.

If you are an artilleryman, cavalryman, or whatever you are—try the same procedure. See for yourself how similar to your own are his administrative problems. See how closely allied are air and ground reconnaissance, artillery and bombardment. Find out for yourself that the air man speaks your language too.

If you are an air man, find out how little you actually know of ground problems. Resolve to increase this knowledge by personal contact. The doughboy, redleg, and armored force men are essentially the same as you are. They are Americans too. Their uniform differs from yours only in that they don't wear the wings or the same insignia.

The truly magic formula would be one which would provide a ready and infallible means of employing mutual understanding and confidence, cooperation and coordination, but unfortunately no such formula has been devised. We know this, but do we realize it? We accept the fact that we need each other, but we don't accept the fact that we must help each other. If we will all take the initial step toward understanding the other person's problems we shall have taken one step in the advance toward ultimate victory.

# Disposition of Personal Effects from Overseas

MAJOR GERALD A. SMITH, *Infantry*  
Instructor, Command and General Staff School

WHAT HAPPENS to the personal effects of a member of the Army of the United States who has been reported as "missing" or "missing in action?" What is the procedure followed today in disposing of the money, letters from home, valuable souvenirs, and pictures of relatives that belonged to a soldier who has been killed in action? What Army agency is concerned with the problem of returning to the rightful owner baggage that has been lost, abandoned, or mislaid either overseas or within the United States?

The Army organization that is responsible for the receipt, storage, and disposal of the "effects" and personal property enumerated above is known as "The Army Effects Bureau." It was created shortly after Pearl Harbor by order of the Secretary of War, and at its inception on 17 February 1942 was charged with disposing of accumulated baggage and the effects of deceased commissioned, enlisted, and civilian personnel of overseas commands. In addition to relieving overseas commanders of this administrative burden, the Bureau was given the responsibility, on 15 April 1942, of disposing of all personal property, other than household goods and automobiles, left at camps, stations, and ports by military personnel upon departure for overseas service. From a modest beginning wherein its principal concern was lost and abandoned baggage from domestic sources, the Bureau has grown by leaps and bounds to a sizable organization whose principal volume of traffic today is from our overseas theaters of war.

Familiarity with the current procedure for handling "effects" and lost or abandoned personal property is of value to all members of the Army, and to those civilians who come under Army control overseas. Such knowledge will enable the individual to inform his relatives of the steps to be taken by them to facilitate recovery of this personal property should the individual die overseas or be separated from such property for any one of several reasons. The importance of maintaining up-to-date and accurate information on the several WD AGO forms that deal with the designation of a beneficiary and closest relatives may also be more fully appreciated. In addition to these personal reasons, a staff officer, present or prospective, in any one of the many types of commands and installations, should find this knowledge of assistance in planning for and disposing of the "effects" of members of the command according to Army regulations and current operating procedure.

Historically speaking, disposal of personal effects first became a major problem in World War I for

several reasons. It was the first war in which large numbers of United States troops were engaged in overseas operations, troops carried more items of valuable personal property with them, and relatives had a greater desire to recover these effects for both sentimental and monetary reasons. Considerable confusion resulted during the early months of 1918 since these effects were being received at a number of our eastern ports, and no standardized system existed for the effective disposal of this personal property. The increasing magnitude of this problem led the Secretary of War in March of 1918 to direct the Commanding General of the Hoboken, New Jersey, Port of Embarkation, to detail an "Effects Quartermaster." His duties were to receive, store, and distribute the effects of deceased military and civilian personnel of the entire AEF. With the conclusion of hostilities, and lack of a need for an Effects Quartermaster, no centralized agency, as such, existed during the peacetime years of 1920 to 1941 for the disposition of personal effects of soldiers of the Army.

The experience gained in World War I led the Quartermaster General, upon our entrance into World War II, to plan for the establishment of a centralized agency to facilitate disposal of personal effects resulting from the present conflict. Although the Hoboken Effects Quartermaster operated for only a few months in World War I, it was evident that this type of activity should be separated from a port with its tremendous amount of activity, critical space, and shortage of personnel. Moreover, in the present conflict we have two battlefronts on opposite sides of the world. The selection of an inland city was therefore doubly necessary, and it had to be strategically located to serve both seaboards as well as to distribute effects and personal property to all sections of the United States. Kansas City, Missouri, with an excellent railroad network, ample storage space, sufficient operating personnel, and accessibility by air, was therefore selected as the location, and the Army Effects Bureau was made a part of the Kansas City Quartermaster Depot.

The Bureau consists of an Effects Quartermaster and two Branches of five Sections each. The Administrative Control Branch handles the correspondence, files, and reports necessary to determine properly the correct beneficiary or "bailee" to receive the personal property handled by the Bureau. The Warehouse Branch is concerned with the receipt, inventory, storage, and shipment of such property. Administrative details, personnel, and transportation required to operate the Bureau are supplied by the Depot. Although an integral part of the Kansas City Quartermaster



Depot, the Bureau in some respects, may be compared to an exempted station. It maintains direct contact with the Office of the Quartermaster General, is in constant touch with The Adjutant General concerning personnel records, and has direct correspondence with the Navy Department and the Maritime Union.

The present Army system for disposing of personal property is founded upon two separate and distinct legal bases. The first deals with disposal of the effects of deceased military personnel, and deceased civilian personnel overseas who are subject to military law under Article of War 2. Such personal effects are handled in accordance with the provisions of AW 112 under which the Effects Quartermaster secures a "distributee" to receive the effects. The other legal basis is that of "bailment," which is the delivery of money or goods to another to be held in trust pending the return of the owner.

Thus, in the first case, since the owner is dead, articles of personal property which originally belonged to him are now a part of his estate, and must therefore be distributed to his beneficiaries in accordance with the laws of the State of his domicile. The War Department, through the Effects Quartermaster acting as summary court-martial under AW 112, does not purport to vest title to the effects in any individual. It is only interested in delivering the effects to the widow or executor of the estate of the deceased, and this individual, the "distributee," must then dispose of the estate of the deceased under the laws of the particular State concerned.

In the second case, the owner of the personal property is presumably still alive, and the War Department, acting through the Effects Quartermaster, is interested in delivering this property to an individual who will agree to act as the "bailee." It is the bailee's responsibility then to hold this property until the owner returns to claim it. If at a later date it is administratively determined that the owner is dead, the bailee is then responsible for taking the necessary action to distribute the "effects" in accordance with the laws of the State in which the deceased formerly resided.

In operating the Bureau under the two legal principles just discussed, personal property has been divided into five categories: (1) effects of military and civilian personnel subject to military law dying outside the limits of the States of the United States and the District of Columbia; (2) effects of "missing" persons (including those missing, missing in action, interned, captured, beleaguered or besieged by the enemy); (3) lost, abandoned, or mislaid personal property which is returned from overseas to the United States; (4) personal property, other than household effects, left at camps and stations by military personnel upon departure for overseas; (5) property, government or personal, left on railroad trains or other common carriers in transit, within

the continental limits of the United States. Personal effects falling within the first category are distributed under provisions of AW 112, while that property coming within the other four groups is handled under the principle of "bailment."

Within the United States, the only personal property handled by the Bureau is that which has been left by military personnel upon departure for overseas, either through loss or because it exceeded the limit allowed the individual at his departure, or that property which has been left by military personnel upon common carriers in transit. Property that has been lost or abandoned at military installations in this country by troops who have not departed from this country is to be returned to the owner by the installation concerned. The "effects" of officers or enlisted men who die within the United States are to be distributed by the appropriate summary court under the provisions of AW 112.

In contrast to the procedure within the United States, overseas commanders have been almost entirely relieved of the problem of handling personal property. War Department instructions prohibit direct distribution of effects of deceased individuals, and all money and personal property must be shipped directly to the Bureau for disposition. To relieve overseas commands of a storage problem, personal property of individuals reported as "missing" or "missing in action" is also to be sent to the Bureau. Thus the only action necessary overseas in dealing with the effects of deceased personnel is to collect any money due the deceased, settle any undisputed local debts in accordance with AW 112, and ship the remaining money and property to the Effects Quartermaster. Personal property lost overseas by individuals who are still present in the theater should be returned to the owners if they can be located; otherwise, returned to the Bureau for final disposition.

Another condition may occur overseas which concerns the effects of deceased civilian personnel who are not subject to Military Law. This class of individuals comes under provisions of the Foreign Service Act, 1940, which provides that the consulate shall be responsible for securing and disposing of the effects of any American citizen who dies, or is domiciled at the time of his death, within the jurisdiction of the said consulate. In such cases it is the desire of the Secretary of War that every possible assistance be given by the appropriate military authority. It would be logical to ship effects to the Effects Quartermaster for final disposition under such conditions.

Current instructions for handling the effects of deceased military personnel overseas provide that, in those commands where the situation will permit, all government property other than clothing necessary for burial will be turned over to the appropriate supply officer. The remaining effects will be immediately delivered to the summary court officer desig-



## DISPOSITION OF PERSONAL EFFECTS FROM OVERSEAS

nated under AW 112 by the commanding officer. He will collect all monies due the decedent locally, including that on deposit in local banks, and pay the undisputed local creditors of the decedent, obtaining a receipt therefore for file with the court's final report of the transaction to the War Department. Local debts of the decedent will be paid only to the extent that monies belonging to the decedent are available. No property belonging to the decedent will be sold. Under AW 112, the summary court officer is the only person authorized to pay undisputed local creditors and collect local debts due the decedent. An extra copy of the final report must be sent directly to the Effects Quartermaster. All personal effects must be inventoried, the list prepared in triplicate. The original list is packed with the effects, the duplicate is mailed to the Effects Quartermaster.

If any monies remain, other than souvenir money, the summary court officer is directed to exchange such sums with the local finance officer for a Treasury check drawn in U.S. dollars, to be issued for cash and indorsed by the finance officer as follows: "Pay only to the Effects Quartermaster, Kansas City Quartermaster Depot, Trustee." If no finance officer is available, the best procedure is to purchase a money order, deducting the cost from the money of the decedent. If neither of these means for converting cash to a negotiable security is available, it is advisable to wrap the money securely and mail it directly to the Effects Quartermaster. The check or money order received in exchange for the cash should be sent by air mail to the Effects Quartermaster. A brief description of the check (number, date, amount, and symbol number) is to be entered on the original and all copies of the inventory of effects.

The personal effects are to be packed in a suitable container, enclosing the original inventory list, and shipped through appropriate ports to the Effects Quartermaster. Each container should be plainly marked with the words "Effects of" followed by the full name, grade, serial number, and organization of the person to whom the effects belonged, and by the word "Deceased." In those commands where the situation will not permit the previously described action to be taken by the summary court officer, the effects are to be secured by the commanding officer of the place or command where death occurred, money due the deceased collected, all cash converted to check and mailed to the Effects Quartermaster, property inventoried, list of effects prepared in triplicate and properly distributed, and the effects packed, marked, and shipped to the Effects Quartermaster. It should be remembered that under AW 112, a summary court officer is the only individual permitted to settle local debts.

The difference in procedure between handling "effects" and the personal property of individuals who are "missing," as well as lost or abandoned

property, is due to the action in the latter two cases being taken under the principle of "bailment" and not under AW 112. Therefore, the summary court officer is not involved, and the necessary action in the case of a "missing" person is taken by the individual's immediate commanding officer. Where lost or abandoned property is concerned, the action is taken usually by the unit quartermaster. Money due the individual is collected and converted to check, then mailed to the Effects Quartermaster. Local debts are not paid. Personal property is inventoried and a list prepared in triplicate. The distribution of the inventory list is slightly different in that The Adjutant General does not receive a copy. The original is enclosed with the property, the duplicate mailed to the Effects Quartermaster, and the triplicate retained with the records of the organization concerned. The property is thereafter properly packaged and shipped through the appropriate ports to the Effects Quartermaster.

Effects and personal property received at a port of embarkation from overseas are shipped by rail in carload lots to the Kansas City Quartermaster Depot. The Warehousing Branch of the Effects Bureau, upon receipt of property, carefully inventories and checks it against the inclosed original of the inventory list noting any discrepancies. Government property is removed, foreign money (except souvenir money) is converted into United States currency, and any cash or check is deposited pending final distribution. Clothing is laundered if necessary. Carefully selected personnel censor papers and photographs for military information, and extract items of property or literature which obviously should not be forwarded to bereaved relatives of the deceased. The effects or personal property is then carefully packaged and stored awaiting shipment at government expense to the "distributee" or "bailee." Where a discrepancy between the contents of the package as received and the inventory list is found, the responsibility therefor is fully investigated by a suitable officer or board of officers.

In the disposition of personal effects, The Adjutant General, before any action is initiated, notifies the Administrative Control Branch of the Bureau of the death of the individual and the beneficiary designated by the deceased. Since the designated beneficiary receives only the six months gratuity pay of the deceased prior to probate of the estate, the Bureau is thus furnished with a "lead" who is contacted in determining the proper "distributee" to receive the "effects" as prescribed in the Articles of War. AW 112 provides that "effects" shall be transmitted to the following: to the widow or legal representative of the deceased, if such be found; or to the son, daughter, father (provided that the father has not abandoned the support of his family), mother, brother, sister, or next of kin in the order named. As previously mentioned in this article, the "distributee"

# MILITARY REVIEW

who receives the "effects" is responsible for final disposition of the estate according to the laws of the State wherein the deceased was domiciled at his death.

While this procedure appears to be relatively simple, complications frequently arise. The beneficiary may not have been properly designated by the deceased. During wartime many persons change addresses frequently and are therefore hard to locate. The deceased may have been married after entrance upon military service, and failed to change his military records. Cases which involve guardianship of minor children of the deceased, a common-law wife, foster parents, or children by several marriages, further help to increase the administrative difficulties of the Bureau in the determination of a proper "distributee" to receive the effects.

The procedure for disposing of lost personal property, and of property belonging to individuals reported as "missing," when received from overseas, is similar in general to that followed in the disposition of "effects." However, since these cases involve the principle of "bailment," the Bureau, upon receipt of a shipment of property, immediately contacts The Adjutant General's Office. If the owner has designated a "bailee" on his WD AGO Form 41 to receive lost, abandoned, or mislaid property, this individual is contacted, his address and relationship to the owner are confirmed, his consent to receive the property as a gratuitous bailee is secured, the effects are shipped to him at government expense, and a receipt is returned to the Bureau.

All too frequently a soldier has failed to designate a bailee, and the Bureau must then contact the soldier and request the designation of a bailee. If the

soldier is within the United States, and not at a staging area, he may receive the property himself by request. If overseas, he must furnish a statement from his commanding officer that the property is needed, and the property will be returned to him. He may designate a bailee to receive the property if he does not want it. If no reply is received within three months, the Effects Quartermaster may select a suitable bailee by communication with an adult beneficiary, alternate beneficiary, or nearest relative, as shown on the "Designation of Beneficiary" form (WD AGO Form 41), or with any individuals deemed by him to be suitable to act as gratuitous bailee because of the close relationship to the owner. If either a designated or a selected bailee declines to accept the property for storage and safekeeping, the property will be stored at the Bureau pending a subsequent designation or selection of a bailee who is willing to act as such.

The difficulty incident to the disposition of "effects" and personal property of a small group of individuals is not too great a problem, but when applied to our present Army and its attached civilian personnel, numbering some eight million, it becomes one of great magnitude. In addition to the difficulties due to the size of the Army, the stepping-up of the offensive is increasing the volume of traffic handled by the Effects Bureau. For these reasons, and to facilitate disposition of personal property, it is imperative that each individual, prior to departure overseas, send all unnecessary baggage home, execute a will, and see that his personal records dealing with the designation of beneficiary and closest relatives are accurate and up-to-date.

## Box Scores of American Combat Aircraft

[From *The Marine Corps Gazette* December 1943]

Name and Location of Air Force	When	Enemy Loss	Our Loss	Rate
Army Air Forces	Dec. 7, 1941–Sept. 1, 1943	7,312 enemy planes	1,867 planes	Almost 4 to 1
Army Air Forces	March 1–Sept. 1, 1943	5,389 enemy planes	1,239 planes	Better than 4 to 1
Heavy Bombers	Jan. 1–June 30, 1943	1,333 enemy planes	316 planes	Better than 4 to 1
Medium Bombers	Jan. 1–June 30, 1943	113 enemy planes	69 planes	Almost 2 to 1
Fighters	Jan. 1–June 30, 1943	763 enemy planes	375 planes	Better than 2 to 1
Fortress of 8th American Air Force based in Britain.	Month of July, 1943, while dropping 3,600 tons of bombs on enemy targets.	500 German fighters	108 Fortresses	Better than 4 to 1
Eighth and Ninth American Air Forces over Sicily, Sardinia, and Southern Italy.	Month of July, 1943, while dropping 12,460 tons of bombs.	342 enemy planes	190 planes	Almost 2 to 1
Fourteenth American Air Force—China.	13 months from July 4, 1942, to August 4, 1943.	442 enemy planes	51 planes	Almost 9 to 1
Navy—North Solomons.	First 10 days of last June's Offensive.	199 enemy planes	34 planes	Better than 5 to 1



# MILITARY NOTES AROUND THE WORLD



## GERMANY

### *Defense Against Hand Grenades:*



Men of the German "assault infantry," in the Orel sector of the Russian front, under a wire "umbrella" used for defense against hand grenades in close combat. The umbrella is so made that it can be folded up when not in use. The heavy cross-wires are covered with chicken wire, which is hardly visible in this picture except against the background of the central disk.

(*Kölnische Illustrierte Zeitung*)

### *Front-Line Training for Parachute Troops:*

In the spring of 1942 the German Command made the following demand: "No more parachute troops without front-line experience." During the summer, therefore, thousands of young parachute rifle troops were sent to Africa to receive their baptism of fire in the hardest tests of desert warfare. They proved their hardness in the crisis at El Alamein when they freed themselves from a threatened encirclement, motorized themselves at the expense of the enemy, and succeeded in rejoining the main body of their retreating comrades. In Tunisia the paratroops pushed far into the mountains to block the advance of the hostile armies, thus making possible the landing of heavy German units in the bridgehead. On the eastern front the paratroops stood side by side with the infantrymen against the gigantic Russian drives of the winter of 1942-1943.

While part of the parachute forces are at the front, the others train incessantly in the practice areas.

Month after month the finest new troops go from the training centers to join the units at the front. Then there follows for the young paratroopers the period of ground combat, which is the last combat exercise required of them before their employment as parachute riflemen.

(*Pariser Zeitung*)

### *Amphibious "People's Car":*

According to German claims, their famous "People's Car," originally designed to be a small passenger car for private use, has proved itself splendidly



on all fronts by its robustness and reliability even in the most difficult terrain. Its manifold possibilities of use have undergone a further extension by its latest construction as a combined land and water ve-



hicle. In the upper picture the man on the back seat is awaiting the order to switch on the propeller. The lower picture shows the vehicle as it appears when afloat.

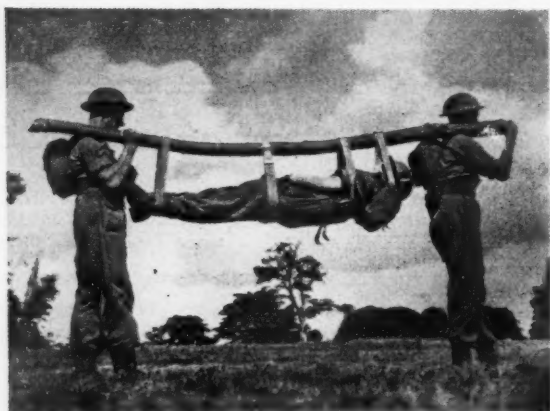
(*Wochenschau, Essen*)



## GREAT BRITAIN

*Transportation of Casualties:*

These pictures, showing some of the methods used to transport casualties from the battlefield to the Regimental Aid Post or Casualty Collecting Post,



were taken at a Royal Army Medical Corps wing of a pre-Officer Candidate Training Unit course. The rather primitive system of transportation shown in



the first picture is called the "dead tiger" method. In the second picture, a motor cyclist provides motive power for a patient on a "Miller-James" stretcher.

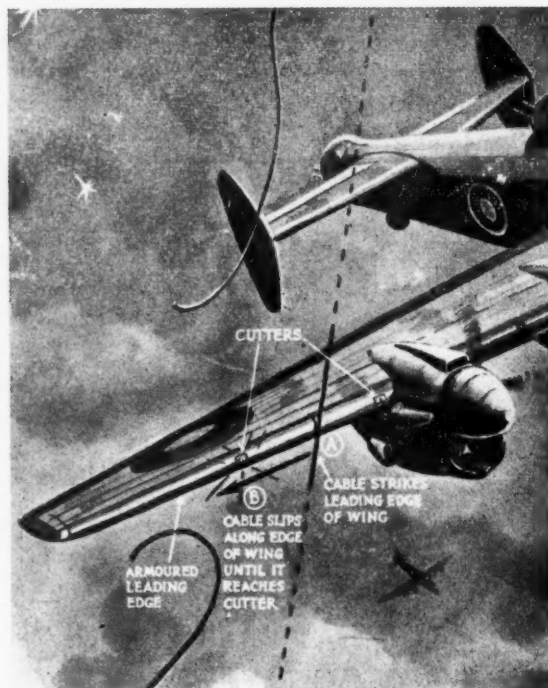


The last of the series shows a two-bicycle method, in which the stretcher, firmly attached to the bicycles, rests on iron supports.

(*The Illustrated London News*)

*Bombers Equipped With Cable-Cutters:*

The drawing shows the cable-cutting device fitted to special British aircraft whose job is to go in before a low-level attack and sweep away the enemy's balloon barrage. The cutter is quite small. It weighs only a few pounds but is so powerful that it can cut through the heaviest wire almost instantaneously. It is reported that sixteen of these devices are fitted



to each bomber. They are made to very accurate dimensions in a special village near London. In the drawing a four-engined Halifax is shown striking a cable with its wing. As the wing strikes the cable, the latter slides outwards or inwards. The moment it comes into contact with the cable-cutter, the wire is severed and the detached balloon soars away.

(From *The Sphere*, Great Britain)

*Naval Protection of Invasion of Sicily:*

During the whole period covering the initial transport of men and material from Great Britain and the United States, the assault on Sicily, and its final occupation, the merchant tonnage lost up to midnight, 17 August, was slightly less than 85,000. Admittedly the opposition of the Italian Navy, i.e., of their larger ships, was of a negligible character, but there were a considerable number of German and Italian E-boats to be reckoned with, which, if they had got among our merchant ships, would undoubtedly have done considerable damage. But the light craft of the Royal Navy were in almost nightly action and succeeded in sinking, damaging, and driving ashore such a large number of E-boats that the destructive efforts of these boats were of a comparatively negligible nature. Truly a magnificent achievement.

Within forty-eight hours of the initial assault no fewer than 7,000 vehicles, 80,000 men, 300 tanks, and 700 guns were landed, an amazing example of inter-service cooperation and brilliant staff work. Our submarines also during the period of the invasion inflicted heavy damage on enemy shipping, while, as always, the work of our minesweepers was of an invaluable nature. The many captured harbors were rendered safe for use in an incredibly short time.

Naval losses during the Sicilian campaign were quite remarkably small. They consisted of only two submarines, three motor torpedo-boats, and one motor gunboat.

The protective work of the Royal Navy, and of the American Navy, during the landing at Salerno, against very heavy opposition, was also magnificently effective.

*(The Fighting Forces, Great Britain)*

### U. S. S. R.

#### *Russian Machine Guns:*



The first weapon in the group above is the Degtyarov light machine gun. Its caliber is 7.62 millimeters and its weight is only 20.7 pounds with bipod. It is gas-operated and drum-fed (49 rounds), and is a basic automatic arm of the Soviet infantry squad. Lightened to 18.5 pounds and fitted with pistol grip and 60-round drum, the Degtyarov in the tank version fires 550 rounds per minute. A heavier Degtyarov design machine gun is the 12.7 millimeter (.50 caliber) which is also gas-operated. It has both a two-wheel mount with split trail and shield and an AA mount.

The air-cooled Maxim Tokarev, which appears second in the group, is equipped with a shield and has

a tripod with precision traverse and elevation gauges. The barrel is quickly removable as on the American caliber .50 machine gun.

Finally, there is shown the M1910 Maxim heavy water-cooled machine gun with its ponderous (90-pound) shielded-and-wheeled Solokov mount. Its rate of fire is 250 to 300 rounds per minute. For anti-aircraft fire the Maxim is provided with concentric ring sights. Quadruple Maxim mounts may be set in trucks or armored trains or may be dug in at airfields. This fires 1,000 rounds of 7.62-millimeter per minute, one belt per gun. The Maxim heavy is recoil-operated.

#### *Russian Mortars:*

The 120-mm mortar shown on the left has a two-wheeled pneumatic-tired carriage which also pro-



jects the mortar tube and carries ammunition boxes. The whole unit weighs 2,530 pounds and can fire six shells per minute up to 6,560 yards. There is also a light 50-mm mortar like the American 60, carried by one man while another carries ammunition.

On the right is a Russian 82-mm mortar of which wide use is made. The early model had an oblong baseplate while the later one has a circular baseplate to which is attached an axle and two wheels. Two men can thus pull the mortar while two others carry boxes of ammunition on their backs. The wheels come off when the mortar is emplaced and the weapon can be broken down into three loads.

*(Special Services Division, ASF)*

### JAPAN

#### *Japanese Antiaircraft:*

The Japanese have been experimenting with new types of antiaircraft projectiles, such as incendiary bombs propelled from the ground by rockets. The Tenth Air Force has reported the use of parachute canisters propelled from a rocket gun. These canisters were encountered at about 1,000 feet, suspended from their paper parachutes, and apparently designed to explode when the parachute cord was jerked by contact with the airplane.

The crews of a formation of B-24's which attacked Vunakanau airdrome at Rabaul on 12 June saw the following new AA phenomenon: "A large white ball

rose to about 7,000 feet and exploded into myriad small red fragments bursting out in every direction. Some of these went to about 7,500 feet." However, such strange and uncommon occurrences have proved interesting so far only because they indicate that the Japanese are experimenting with new AA artillery devices, doubtless because they have experienced difficulties with their standard weapons.

Japanese ground batteries of heavy guns apparently have no electrically operated data computers, and the guns are aimed by fixed sights. Lateral and vertical deflection, slant range and super-elevation are determined by using drums, dials, and discs located on the gun. The Japs have achieved their greatest accuracy at medium altitudes, the accuracy falling off sharply above 15,000 feet.

Sometimes the Japanese use stalking planes, flying at the same altitude as our bombers, to relay information to the gun crews. When these stalkers are present, adjustment of antiaircraft fire has been more rapid than normally. The Japanese are also clever about preestimating the altitude of clouds to aid in determining the altitude of the attacking planes.

Although inaccuracy is the rule when only one bombing approach is made, a second approach at the same altitude and from the same direction will very often encounter accurate AA, since the gunners can then use data computed from the first approach.

(*Air Forces General Information Bulletin*)

## CANADA.

### *The Canadian Army Overseas:*

The Canadian Army Overseas is made up of two corps, comprising three infantry divisions, and two armored divisions. Besides these there are large numbers of ancillary or corps troops. Corps troops are concerned with communications, repairs to equipment, transport of supplies, medical and hospital services, and many other functions. The Canadian Army has more than 170 such units.

As the first contingent of the army landed in Britain on December 17, 1939, many of the men have been overseas for four years. Some of those who have been away from Canada the longest have been engaged in some of the heaviest fighting of the war, for the Canadian First Division formed a part of General Montgomery's famed British Eighth Army in the conquest of Sicily and in the invasion of Italy. Canadian casualties reported in the Sicilian campaign were:

	Killed and Died of Wounds	Wounded	Missing	Total
Officers -----	38	131	7	176
Other ranks -----	440	1,720	115	2,275
	478	1,851	122	2,451

(*Canada at War*)

## UNITED STATES

### *The 240-mm Howitzer M1 on Carriage M1:*

The 240-mm howitzer M1 on carriage M1 is a modern, long range, and relatively high velocity mobile field piece which will fire a 360-pound high explosive projectile more than fourteen miles. The total weight of howitzer and carriage is about thirty-two tons in firing position.



Official Photograph, U. S. Army,  
Ordnance Department, A.S.F.

The howitzer is provided with two rubber-tired transport trailers, one for transporting the cannon and the other for the carriage on which it rests. These transport trailers weigh roughly six tons each. They are designed for high-speed transport and are capable of being towed at speeds equal to that of the prime movers—10-ton trucks where good roads exist, or heavy tractors when the going is rough.

Two methods have been devised for putting the howitzer into firing position. The first and preferred method involves the use of a 20-ton truck-mounted crane for raising the carriage off its transport wagon and setting it over a prepared position on the ground, after which the howitzer, together with its cradle and recoil mechanism, is raised from its wagon by the crane and lowered into position on the carriage.

In addition to being used for raising and lowering the carriage and howitzer, the truck crane may be employed for digging recoil pits and holes for the spades by means of a clam-shell bucket. When this method is used in relatively soft ground, emplacement may be effected in less than two hours.

The second method, intended for emplacing the howitzer in firing position when the truck crane is not available, employs only the prime movers and their winches, together with two hand-operated jacks mounted in brackets on the top carriage. When this method is employed, the recoil pits and holes for the spades are generally dug by hand, and emplacement usually takes about four hours.

(Office of the Chief of Ordnance,  
Washington, D. C. The above photograph appeared in *Army Ordnance*.)



# FOREIGN MILITARY DIGESTS

## Reconnaissance in Attack

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article in *Krasnaya Zvezda* 21 August 1943.]

THE OFFENSIVE of our troops in the Kharkov and Bryansk sectors is developing under complex conditions. The Germans are resisting stubbornly. Ceaselessly moving up reserves, they repeatedly undertake counterattacks. Withdrawing, they do not leave undamaged a single bridge or road, mining all advantageous sectors of the terrain. In this situation the role of reconnaissance especially increases. On how watchfully and skilfully it performs, on how promptly and exactly it can guess the intentions of the enemy, solving the system of his defense and the amount of his strength, depends to a great degree the whole course of our offensive operations. That is why now, more than ever, the work of reconnaissance must be paramount with each commander.

What decides the success of reconnaissance activity in the attack? First of all, organization.

The extent of the questions to be solved by reconnaissance in the attack is far larger than in the defense. Besides that, each of these problems must be completed in the shortest possible time. If, for example, in defense it is sometimes possible to spend days preparing reconnaissance, in the attack it is necessary to do this in a few hours. Strict calculation and the accurate accounting of time, ability to use every hour and every minute as productively as possible—this is the first requirement of scouts. All the work of reconnaissance agencies—from the staff officer to the line scout—must be permeated by one endeavor: to do everything in strictly designated periods, to appreciate time, to be exact to the point of pedantry.

The complexity of reconnaissance work in the attack is further aggravated by the fact that the movement of our units proceeds unevenly. There is no continuous front line; separations and gaps occur; exposed flanks develop. At the same time, the enemy is steadily seeking out the weak spots in our combat formations in order to direct his counterattacks at them. Acting under such conditions, scouts must quickly determine directions, positions, and sectors where special watchfulness is demanded of them, and where they must direct their main efforts. Cor-

rectly noting main objectives, they must at the same time not disregard secondary sectors either.

This obligates general staffs to the most careful, well thought-out, masterly planning of all reconnaissance activity. The experience of the present offensive battles has again affirmed that precisely in such planning, precisely in the unremitting and skilful conduct by the staffs, is the key to the success of reconnaissance. Not all, however, have recognized this. Along with a multitude of examples of fine reconnaissance organization by staffs there are also facts of another sort. Thus, when a request to sign an order for reconnaissance for distribution to units was brought to the chief of staff of a certain unit of the combined arms, Lieutenant Colonel Pilyaev, the Lieutenant Colonel snapped: "This is not your affair. They (the units) themselves know what they are to do." Another time when this chief of staff was asked to help in formulating a plan for reconnaissance and to indicate its problems, he limited himself to the following remark: "Think up something for yourselves." There is hardly any need of pointing out how far Lieutenant Colonel Pilyaev's conduct is from those requirements which present-day warfare demands of every chief of staff. Problems of reconnaissance are not thought up, but flow from the actual conditions of the situation, from that information of the enemy already available, and mainly from the decision of the commander. And who better than the chief of staff knows both the situation and the intentions of the commander! Nobody can so clearly determine the nature of necessary information about the enemy, nobody can so correctly direct reconnaissance, as the chief of staff. To do this is one of the most important and direct of his duties, which he must fulfil with full responsibility.

Staffs of regiments and divisions are called upon every day to guide the reconnaissance activity of troops, directing the efforts of reconnaissance in those channels which seem decisive at the given moment. Combat experience teaches that the intelligence officer of a regiment, and also the chief of intelligence of a division, must form a plan at least one day ahead. This plan defines the reconnaissance problems of battalions, indicates where and for what purpose reconnaissance agencies are sent out from the regiment and the division, and designates other measures. Precise direction of all reconnaissance activities by staffs of units of the combined arms must

be the rule. In those cases when this rule is broken, when the staffs of units plan reconnaissance with insufficient care, blanks and gaps in the data on the enemy are unavoidable. Acting independently without knowing exactly what information is necessary to the higher staff, the intelligence officer or chief of staff of a regiment naturally gathers only those data which the commander of the unit demands. And at times it will result that each unit sends out scouts in the sector of its attack, sometimes surveying the terrain on the flanks. The intervals not occupied by the attackers, and other more dangerous sectors, remain unsurveyed by reconnaissance, becoming, so to speak, neutral. Clearly this can lead to most disastrous consequences.

War teaches that only accurate distribution of reconnaissance problems among various units permits the most correct and productive use of the forces and the means of reconnaissance, facilitating the solution of all intelligence problems. When intelligence service is well organized from top to bottom and is carried out according to plan everywhere, then there is more guarantee against all possible mistakes, and the commander can be sure that nothing escapes his reconnaissance and that it does not omit a single possibility.

If it is impossible to be reconciled to insufficiently complete use of the intelligence agencies, it is all the more impossible to put up with the use of these agencies in ways that are not in accordance with their assignment. Often scouts are kept in reserve, not as a supply of special reconnaissance means, but as a *general reserve*. Cases are known when, on the slightest necessity for strengthening forward units or for plugging up a breach, scouts were sent into the battle. To what does this lead? Simply to this, that the scouts, coming into the general combat formation, are involved in long battles, and when need arises for sending out supplementary reconnaissance, scouts are not at hand. In a certain infantry division, the intelligence officer, Senior Lieutenant Krylov, was sent to forward units with responsible tasks having no connection with intelligence. While he was fulfilling these tasks, the scouts of the unit worked poorly. They did not promptly discover a concentration of thirty-five German tanks in front of the division, and failed to warn the commander of a counterattack prepared by the enemy. Is it not clear that the blame for this falls primarily on the commander of the unit of the combined arms, who in the heat of the attack deprived the reconnaissance of its leader? Combat practice testifies that improper use of intelligence agencies weakens reconnaissance, leads to premature loss of experienced scouts, and hits the vital interests of the troops. It is always necessary to remember this.

Offensive battles, with their frequently changing and complex situation, demand fine cadres of scouts. There are such cadres in units of our Army. Among

the heroes of the present offensive battles are many scouts who, despite all difficulties, in any situation, promptly furnished to the commanders the necessary information about the enemy. The duty of our officers is to care for these valuable elements and use them correctly. The better the general staffs guide reconnaissance work and the more accurately it is planned, the farther will the commander see and the more will he hear with the aid of his reconnaissance.

### Mortars In An Inhabited Place

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article by Colonel V. Urbanovich, Soviet Army, in *Voennoe Obuchenie* 19 August 1943.]

THE 50-millimeter mortar is a weapon of close combat. In the majority of cases the mortar squad acts within the composition of the mortar platoon. But often the fire tasks are given also to gunners of individual mortars. Most often this happens during battle in an inhabited place.

The small weight and dimensions of mortars permit the gunner to move rapidly, following the infantry and supporting it with fire. These advantages of the mortar facilitate the choice of firing positions, which again is valuable in inhabited places where the actions of various fire elements are limited by narrow streets, buildings, ruins of houses, barricades, etc. All this makes the mortar, when in skilled hands, the reliable aid of the infantry.

But not all targets in inhabited places are accessible to the mortar. As a rule, the enemy tries to dispose his fire elements under the protection of stone and wood constructions in which special embrasures are made. Naturally, fighting such targets is beyond the capabilities of the 50-millimeter mortar, as its shell is intended for fragmentation action and does not have a sufficiently powerful explosive action. For this reason the mortar men must approach the choice of target with the realization of the peculiarities of their weapon.

Does it follow from this that in an inhabited place the 50-millimeter mortar cannot combat the fire elements of the enemy? Not at all. Even here there are for the mortar very many important targets not reached by other types of weapons.

Let us suppose the enemy infantry has occupied a position in the ruins of a building. How are the enemy riflemen to be driven out? Rifle and machine-gun fire does not penetrate the walls. Here the mortars come to the aid of the infantry. Using their high angle fire, the mortar crews hurl shells at the enemy through the destroyed upper part of the building. Bursting inside the building, the shells destroy hostile soldiers or force them down deep into hiding where they must cease fire, and this directly benefits our infantry.

Another case. The enemy disposed his machine guns and riflemen behind a building. The mortars fired their shells over the building and the shell fragments wounded the Hitlerites located there. Or still another example. The Germans used a building as a fortification from which a machine gun stopped the movement of our infantry. No guns were near. Then mortar opened fire. True, they could not destroy the dugout, but the mortar shells with their fragments, and rocks and sand lifted by the explosions, blinded the hostile machine gunners, prevented them from conducting aimed fire, and sometimes put them out of action.

It is possible to cite an innumerable number of examples of how mortars can be used in fighting for an inhabited place. But let us limit ourselves to what has been said and study more closely the main principles of action of mortar crews in battle in an inhabited point.

### In the Attack

Before attacking any inhabited place it is necessary to occupy a starting position for the attack. Infantry takes up this position as close as possible to the edge of the village and mainly in those places where various buildings project on our side and suitable approaches to them exist. At this time the task of the mortars is to crush hostile fire elements both at the objective of attack and near it, and also to deny to the enemy a chance to reinforce the personnel in the outlying buildings.

Firing positions of the mortars whether open, concealed, or semi-concealed — are chosen on the flanks or behind chains of infantry units, not nearer than thirty meters, but also not more than a hundred meters from them.

An especially important role can be played by mortars after our artillery shifts fire into the depth of hostile defense. At this moment all the surviving fire elements of the enemy begin to fire and his soldiers come out of hiding and occupy their positions preparing to beat back the attack. Mortars must in every way prevent this by their strong fire. Taking advantage of the fact that the radius of fragment dispersion of mortar shells is less than that of artillery shells, our attacking infantry can approach within close range of the objective of the attack. When infantry seizes various houses on the edge of an inhabited place, or some part of it, it at once takes measures to consolidate what is captured. At this time, mortars help the riflemen, conducting lively fire on the counterattacking enemy.

Within the village proper, it is profitable to act with separate mortars attached to commanders of the groups storming the separate buildings. At this period mortars occupy firing positions in yards, ruins of buildings, behind stone walls, and, finally, within the buildings. In the last case firing is accomplished through windows and holes in the walls. The

task of the mortars is to prevent the enemy from approaching the building seized by us.

In the inhabited point, greatest significance attaches to rapid maneuver of firing positions and precisely functioning communication with the commander of the infantry unit. The platoon commander and all soldiers of the gun crew mortar observe the enemy. Communication between the infantry and mortars is by signals. They are given by tracer bullets or rockets of determined color in the direction of the target, by voice, or by runners. By the same means target designation is arranged between mortars, artillery guns, and machine guns.

### In Defense

During the defense of an inhabited place mortars have the task of striking enemy infantry and fire elements concentrating for the attack in gullies and gardens and other approaches to the objectives being attacked by the enemy.

Mortar crews choose firing positions on the forward edge of the defense with the thought of having a chance to hold the most important approaches under fire, especially those whose bombardment is impossible or inexpedient for guns and machine guns. Positions must be concealed from the artillery, mortar, and machine-gun fire of the enemy. For this it is necessary to use buildings, cellars, and sewers and other installations, depending on the situation. For example, during strong hostile bombardment the crew and equipment can take cover in a cellar; but, as soon as it is necessary to fire, the mortar crew must at once come out and occupy the nearby area prepared earlier. If there is time, the cellar may also be arranged as a place for direct fire. During the Stalingrad defense, our mortar crews made their positions in various main conduits (water, telephone, etc.) underground. They took cover there during bombing, and fired from there, having organized their positions correspondingly.

In scouting a firing position, the commander of a platoon (mortar) must not only choose suitable places for the mortar, but also mark several routes of approach to the positions, because some of them may be blocked in case of destruction of buildings. All routes chosen by the commander must be known to shell-carriers.

Usually in the organization of defense there is enough time for careful preparation for the conduct of fire. Therefore all gunners must know thoroughly the orienting points indicated by the infantry or the mortar commander, and the distances to them. On all approaches suitable for the enemy and in places of concentration, it is necessary to prepare data for firing beforehand, written down by the commander of the platoon. If the situation permits, the fire is registered on the most important regions.

In firing positions (main as well as reserve) it is necessary to build up a supply of shells, for barrage



fire of various types demands a large expenditure of ammunition. Stores must be concentrated in places where fires and the destruction of buildings will not make difficult the supply of mortars.

During the hostile artillery preparation, the mortar platoon is in hiding and an observer watches the enemy's actions in important sectors. When the enemy begins the attack, the mortars open heavy fire on groups of hostile personnel and on the positions of hostile mortars, machine guns, and artillery. It is very important to seize the moment of start of the attack and sweep the attackers with strong fire. In case the enemy still succeeds in breaking into our defensive positions, the crew of the mortars must continue to fight until ordered to retreat.

### German and Italian Prisoners of War

[Extracts from an article by Captain R. S. Vine, Royal Army Medical Corps, in *Journal of the Royal Army Medical Corps* (Great Britain) September 1943.]

MUCH first hand experience of the sort of people we are fighting is to be gained from such a post as Senior Medical Officer of a prisoner of war camp.

Captured soldiers are not criminals. Apart from the fact that the Geneva Convention lays down complete instructions for the treatment of prisoners of war, it is obvious that an ordinary soldier, however much we may hate those who inspire and lead him, is carrying out his duties and is in normal times a man of peace, often much more so than a war-like civilian. If this is borne in mind, the correct attitude will be adopted towards captured soldiers, particularly in the case of highly disciplined German soldiers, who are very amenable to tactful but firm handling. They will automatically obey a definite order clearly given, providing that it is not one which they are not entitled to obey. German doctors are soldiers first and physicians second (this also applies to padres, etc., as witness the fine stand made by Major Bach at Sollum in January of this year). Doctors can be very regimental indeed and it is a revelation to see a German doctor's command of a squad of nursing orderlies.

While I am on the subject I had better continue with a very brief description of the German Medical Services. A German doctor, dentist, or padre joins the army in the first place as a private soldier and his subsequent promotion depends as much on his leadership of men as on his professional capacity. He may never rise above the rank of *Gefreiter*—lance-corporal. In our camp we had a qualified dentist who ranked as a full corporal, and a doctor who was an "*Unterarzt*," i.e., just less than a second lieutenant. The medical personnel were organized into Sanitary Companies in addition to Regimental Nursing Orderlies, Stretcher-bearers, and Assistant Stretcher-bearers. There were also larger medical

units such as field ambulances and hospitals. The medical officers were mostly under thirty years of age, and were specially keen. The clinical acumen of the young medical officers I met was in my opinion of the standard of good senior students. Particularly in the case of the Germans, they seemed to rely too much on the firm of Bayer at the expense of a good grounding in elementary pharmacology. They seemed to be unfamiliar with the usages of the ordinary drugs but knew the appropriate "patent" preparation produced by the big German firms. This predilection for "patent" medicines applies even more to the Italians who used to order all sorts of fancy preparations and were especially keen on calcium injections as a panacea for all ills. They bought many patent preparations privately.

As regards the general health of the prisoners of war, I would say the following. The Italians taken in the original 1940 push, when we unexpectedly captured Graziani's army, were I understand a very miserable and scruffy looking lot, and pictures taken at the time undoubtedly bear witness to this fact. I did not see them at the time but when I took over the medical arrangements of the camp in July 1941 they were already looking fit and bronzed and very well fed. The few taken early in 1942 were an extremely ill-assorted looking lot compared with the Germans. The latter were on the whole in an excellent state of fitness as would be expected of a picked body of men such as the Afrika Korps. Those taken early in 1941 were very fine specimens and those taken late in 1942 were also very good. The Germans captured in the November 1941 offensive were mostly very young, scarcely out of their 'teens, and many of them were very white, having obviously only recently arrived in Libya. The average age of the German soldiers was between twenty and thirty. Few were over, and those who had served in the last war could have been counted on the fingers of one hand. The Italians were of all ages, many of them having been civilians in Libya, and included old men of over sixty. On the whole, they were of smaller stature and less clean-looking than the Germans, but the latter were by no means models of hygiene. I sometimes discovered latrines soiled by Germans who had squatted on the top of the structure! The environs of the cookhouses were not always what they should have been but, when horror was expressed that German soldiers were not as clean as the Italians (whom we had well trained by this time), the matter was quickly put right.

The hygienic arrangements of the camp were highly satisfactory and full use of prisoners of war labor was made. The Italians were generally willing enough to work. As a matter of fact the enforced idleness of a prisoner of war camp is one of the greatest trials prisoners of war have to contend with and they often beg to be put on some job or other in order to have something to do.

The Germans are born organizers and, as soldiers are models of discipline, being collectively like sheep, are easily directed. Their collective standard of intelligence is that of average schoolboys and like schoolboys they can be sulky, cruel, and stupid. They seem to be very prone to be governed by the mob instinct and showed remarkable harshness in taking "justice" into their own hands as in the following case. A young fellow who was beaten up by his comrades was brought to me one morning. He was literally a mass of bruises and abrasions with both eyes swollen and blackened. Bruises were especially noticeable in the lumbar regions where he had been savagely kicked after being knocked down. The reason for this unwarranted treatment was that he was prone to petty theft and was dirty in his personal habits. He had been thrown out of the tent and made to sleep in the open. He was definitely a case requiring psychiatric treatment and had he been reported in a normal way the matter could have been dealt with in a proper manner. This was not the only case in which German soldiers had to be rescued from unpleasant treatment at the hands of their brethren but it serves as a typical example. One evening the prisoners of war were given a kind of fatherly talk by the Camp Commandant in which they were advised to behave themselves and not to make so much row, etc. This was followed in some instances by rude noises and cat-calling. Immediately the order was given throughout the camp (through the loud-speaker): "The C.O. directs that the prisoners of war will instantly cease to behave like children and will go to bed quietly like German soldiers!" The noise stopped at once and they all went sheepishly to bed. The Germans organized themselves into separate companies, kept themselves fighting fit by sports, gymnastics, and other exercises (presumably waiting for Rommel to relieve them!) and when on one occasion the senior NCO's were sent to another camp, the junior soldiers stepped into their places and carried just as much authority.

The Italians are of course more artists than soldiers and all facilities were accorded them to develop their artistic talents. In the pens they made beautiful architectural models from sand-bricks made by themselves, and a row of tents with finely constructed garden walls, gates, archways, model churches, parks, etc., looked for all the world like an elegant suburban district. The German constructional instincts were in most cases directed to warlike subjects—"sand-table" models of a battle terrain, air-dromes, etc. The Germans were excellent chorus singers and seemed to sing best without music, whereas the Italians had to have musical accompaniment. The Germans are naturally very serious about everything connected with military matters and do not realize when they are having their legs pulled. A certain German officer air-ace was in the

habit of walking about his pen at night apparently examining the wire. When asked why he did not sleep, he said he suffered from insomnia. He was requested to remain in his tent from the hours of ten o'clock at night till six o'clock next morning and not be wandering about at night; otherwise the sentries would not get a wink of sleep! He was not amused but kept to his tent.

One of the most important experiences one has in connection with prisoners of war is the direct dealing one frequently has with representatives of Neutral Powers representing enemy countries. They are naturally interested in the state of health of the prisoners of war. A Mixed Medical Commission consisting of Neutral and Allied Medical Officers periodically examines candidates submitted by the Senior Medical Officer as suitable for repatriation in exchange for our own wounded held by the enemy. These contacts with representatives of other countries add greatly to the interest of looking after prisoners of war.

A knowledge of the German and Italian tongues naturally makes the job a hundred times more interesting but it is certainly not essential as one nearly always finds a medical officer who speaks English fairly well. With a little tactful handling the medical officers were generally very helpful not only in a professional capacity but in quelling any tendency to mutiny on the part of the prisoners of war. If they understand you are not going to put up with any nonsense from them and, at the same time, you are obviously doing the best you can to assist them to carry out their professional duties with as little hindrance as possible, they are only too willing to reciprocate in any way. This applies equally to Italians and Germans.

### Discipline In Telephone Conversations

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article by Major K. Plestov, Soviet Army, in *Voennoe Obuchenie*, Moscow, 26 August 1943.]

IN MANY telephone exchanges located in the front zone it is possible to see the sign "Caution. The enemy hears you!" or "Observe strict discipline in conversations!"

Such signs are not put up idly. The Germans employ various tricks for finding out the plans of our command, to determine what units of our Army occupy a given sector of the front, etc. For this purpose the Fascists use not only combat reconnaissance, but also reconnaissance by means of communications, i.e., they try to listen to our radio and wire transmission.

True, it is fairly complicated to do the latter as the electric current on the wires is conducted in strictly determined directions. But modern communications



technique permits using special listening apparatus to intercept telephone conversations on wires even at a considerable distance from them. We are not speaking of such simple methods of listening as direct tapping of the telephone line. The German Army has in its units special personnel who conduct interception of telephonic transmission. That is why our telephone personnel must strictly observe discipline in every message, be it operative or service, however insignificant it may appear at first glance.

The telephone men must understand that every superfluous word, openly-named designation of a unit, or name of commander or of the telephone operator himself, all constitute indications the compilation of which by the enemy can give him an idea of what unit is occupying the front before him, who commands it, etc.

What constitutes the discipline of conversations? Discipline of telephone conversation is the strict observance of rules in making a call, sending and receiving a message. These rules must be known not only to the telephone personnel, but also to those soldiers and commanders who have to use the telephone.

Every telephone exchange serving a headquarters (commander) has its call number—an agreed designation. The call numbers of all exchanges of the size of a regiment, division, etc., are made up by the corresponding chief of communications and distributed to stations in the form of enciphered tables (code). In the army the following order of call and answer are adopted. The telephone operator of the calling station says, for example: "Saratov (Saratov is the name of that station which he is calling), this is Kiev (name of his station) checking," if the condition of the line is being checked, or, "Take a telephonegram," and so on.

When the telephone operator has to call the commander, he uses another list, the numbers of the staff officers. Each officer has his call number, most often numerical. The process of calling any officer proceeds as follows. The telephone operator calls the required station and gives his number, the number of the commander to be called, and the number of the commander who is calling. For example: "Saratov, this is Kiev. 92 wants 110 at the phone." The telephone operator on duty at the called station answers the call: "Saratov listening. 92 wants 110 at the phone." And after this he connects with the corresponding officer.

If a telephonegram is transmitted, the telephone operator filling the blank and entering the content of the telephonegram in the journal, calls the necessary station (by the above indicated method) and adds: "Take a telephonegram." Its contents are dictated in exact conformity with the original. The telephone operator has no right to add anything himself, nor to leave anything out of the text. After transmission the telephone operator says: "I have transmitted

such and such," and writes down who received the message and the time.

Transmission carried on in this manner, even if known to the enemy, tells him nothing, because the agreed designations conceal the content securely.

To maintain discipline of telephone conversations is obligatory not only for telephone personnel. The commander in battle sometimes forgets, in the heat of fighting, that his conversation may be heard by the enemy, and begins to call his subordinates by name and post, units and subunits by their numbers, etc. Cases are known where commanders, hastily compiling their list of agreed designations, thought that they had secured transmission. In such "codes," for example, tanks are called "pods," infantry "fellow countrymen," aviation "pigeons," etc. One thoughtless commander, having taken a code table for conversations, provided it with his "explanatory" words. Giving a report on ammunition, called "cucumbers," he said by telephone to the chief of supply: "When are you sending cucumbers? Remember please, that we have enough fragmentation cucumbers; we need armor-piercing and incendiary ones . . ." It is hardly necessary to indicate what such a "code," if it might be called such, is worth, and how much harm it can cause.

Conversation by telephone must be short and laconic. The longer the conversation lasts, the greater the danger that some word or other will be used that will give the enemy valuable information.

Messages in the clear by telephone are allowed only when followed by action; for example, in transmission of orders concerning the opening of fire or communication about sudden danger threatening a unit or subunit. But even in these cases the call to the recipient absolutely must be in code.

Thus, discipline of telephone conversations means the exact observance of existing rules. Briefly these rules are reduced to the following: It is possible to call a unit or subunit, or a commander, only with the aid of the corresponding agreed number. Agreed terms are substituted for all names of units, terrain points, types of weapons, etc., using a previously established code for this purpose. In case of the slightest doubt of identity of the recipient, transmission is broken off until it is clear whether a third party is on the line intercepting the message and pretending to be the telephone operator on duty, or a line supervisor. Observance of the cited rules secure indispensable secrecy of telephone transmission, accuracy and system of conversations.

### A Heavy Field Howitzer Battalion Before the Stalin Line, 1941

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article by Lieutenant-Colonel Kreppel, German Army, in *Artilleristische Rundschau* January 1943.]

SINCE we left Lemberg, there had been no more

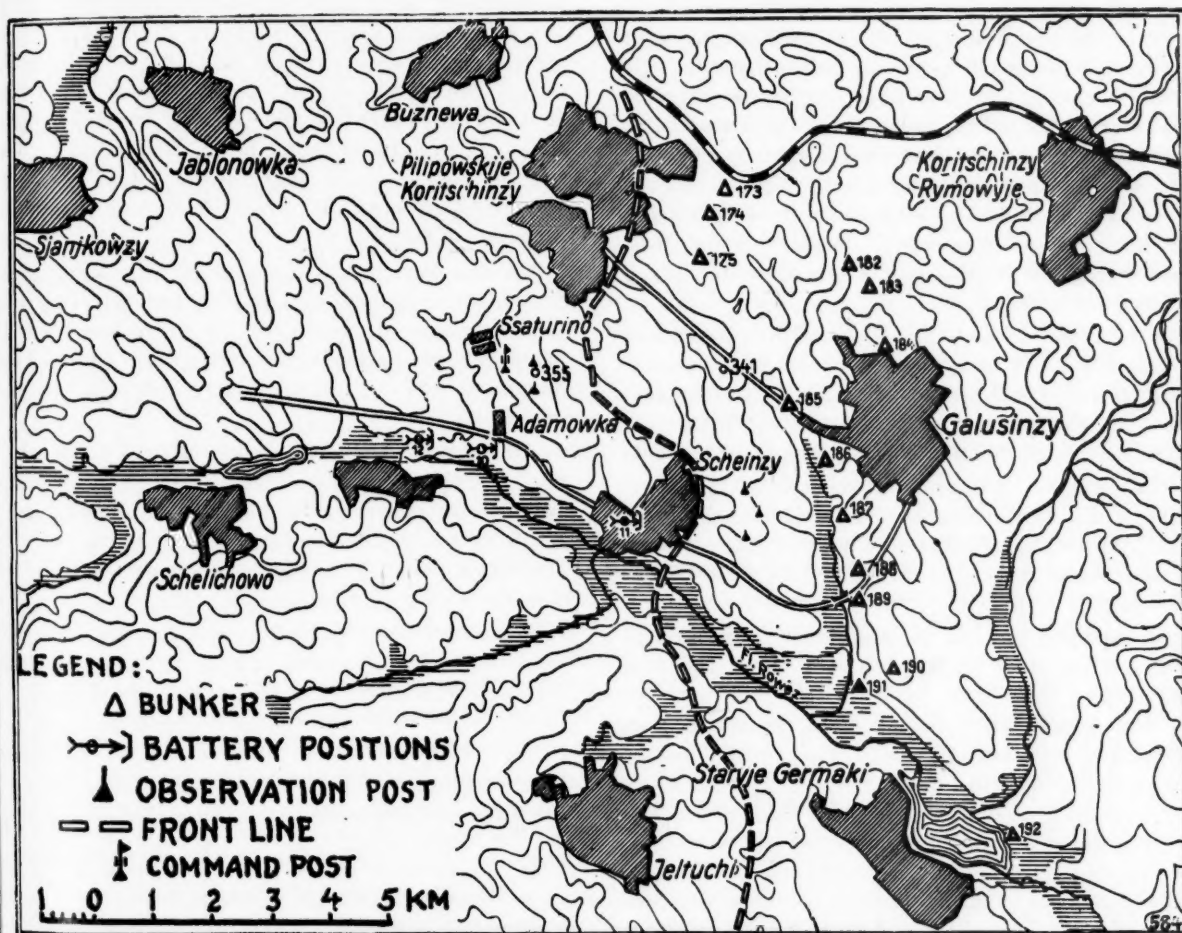


halting. The divisions were in pursuit of the enemy and had sent out hurriedly organized advance detachments whose job was to keep on the enemy's heels. My battalion (heavy field howitzers) was assigned to the motorized advanced detachment of a Bavarian mountain division.

On 10 July 1941, the side roads branching off from the few highways leading to the east were almost bottomless on account of the bad weather that was setting in; it was almost impossible to make any further advance even with vehicles intended for

sun came out again bringing with it hopes of an improvement in the discouraging road conditions.

Little by little the leading portions of the advanced detachment had pushed their way ahead to the line of the enemy's combat outposts. Since those portions of the division that were advancing on foot were lagging far in the rear, there was still sufficient time for artillery reconnaissance. From the top of Hill 355 north of Adamowka, a good view was to be had over the country on both sides of the long-drawn-out village of Galusiny along whose front edge lay a



cross-country purposes. Hence, the battalion went into camp in a woods to the north of Jarmolinzy. The whole of that afternoon and the following night, violent storms broke upon us with a regular deluge of rain. It was a poor outlook for an artillery battalion that was animated with a desire to push ahead.

In spite of the unfortunate weather conditions, the battalion fought its way farther to the east on the following day. Indeed, it was necessary to get to our sector on the much-discussed Stalin Line as quickly as possible. In the effort not to let our contact with the commander of the advanced detachment be broken by any chance, I hurried with my adjutant, through mud puddles, mire, and regular lakes, toward the front. It was lucky for us that the

part of the enemy positions. On the afternoon of that day, in bright sunshiny weather which provided good visibility, the order was given by the divisional commander for infantry and artillery reconnaissance, I myself being assigned the task of carrying out the preliminary reconnaissance for the artillery.

The terrain, which was full of depressions, offered chances everywhere for heavy as well as for light battery positions. But part of the routes of approach could be observed by the enemy, so that movements would have to be made after nightfall. It proved to be more difficult to find a sufficient number of locations for observation posts, most of which were crowded together at the top of dominating Hill 355. But there were already other forces here such as

riflemen, antitank units, and antiaircraft artillery employed for close defense. It was a miracle that the enemy, who could not have failed to note the lively traffic on the top of the hill, did not fire, but precautions were quickly taken to prevent our movements from being seen.

As we continued our reconnaissance it became evident that the village of Scheinzy, which was strung along a prominent slope ahead of us and to the right and which, besides, was still occupied by the enemy, afforded, on the one hand, good opportunity for the enemy to observe the routes of advance of the division, and, on the other hand, shut off our view of the bunker positions on the other side of the village. It was clear to us that we should have to take Scheinzy before we attacked the Stalin Line, in order to make it possible for the observation posts which we should establish there to direct observed fire on the line of bunkers south of Galusiny. The order was immediately given and Scheinzy was captured that very evening by a rifle battalion, which had recently arrived.

As the result of a change in the attack plans and direction, we had to reconnoiter for new positions. The attack was to be conducted with the main direction of assault curving around over the hills to the south of Scheinzy. Scheinzy itself was to be left out.

On the basis of a thorough discussion of the order of the attack by the commander of the attacking infantry regiment and the commander of the artillery regiment, the missions of the artillery were determined.

The battalion received the assignment of neutralizing the recognized enemy bunkers, Nos. 186 and 189 south of Galusiny, by the use of one battery, and with two batteries firing from the subsequent positions at and west of Adamowka, to hold recognized enemy forces in Galusiny in check, as well as to combat both known and subsequently appearing enemy installations in this region. At the same time we understood well that in combating the known emplacements or concrete bunkers, our task was less a matter of their destruction than of holding these installations in check. And in this task it was principally a matter of neutralizing the effectiveness of the enemy crews by damaging or blocking the firing ports, as well as through the moral effect.

For the first task, i.e., the neutralization of the enemy bunkers, the 11th Battery was designated, and the battery commander was made acquainted with the situation. It was out of the question to combat them either from an open or a concealed position at very close range, as it was not possible to bring up the heavy guns in the terrain which was wholly in view of the enemy. A suitable sheltered firing position was available in Scheinzy. The range from there to the enemy bunkers varied between 3,500 and 4,000 meters. Considering the dispersion, this range could be regarded as favorable. It would

be necessary to find locations for the observation posts in the grain fields east of the village on the flat terrain which sloped down to the bed of the small stream. Since it was necessary to fire at point targets which, in dealing with the bunkers, had to be combatted one after the other by the individual guns, three observation posts were sought for these special tasks, two of which were connected with the firing positions by telephone, one by radio. The commander himself, at the most important point, and two lieutenants were to take care of this task. These observation posts were so selected that they lay as far as possible under the line of flight of the projectiles, so as not to render difficult the adjustment of the fire on the definite point targets. This was, to a certain extent, made possible by the employment of three observation posts. Nevertheless, during the course of the engagement it was necessary to change the position of one of them on account of a change of target.

For the second task, i.e., the holding in check of the enemy in Galusiny, the 10th and 12th Batteries were engaged. In this case the fire control was in the hands of the battalion commander who had his command post beside the battery observation post on Hill 355.

Adjustment fire and fire for effect by the whole of the artillery was planned for the following day between the hours of 0700 and 1000. It was a beautiful bright summer morning when the batteries in the sector began to send over their greetings to the Bolsheviks.

The battalion had determined a considerable number of target points, and after 0700, after checking the base line directions, had the firing data ascertained first from the two batteries to the most important target points in order to render possible a concentration of fire on them at any time. For this purpose, the batteries had been surveyed in their own network and the "coupling plan" worked out. [The meaning of this term, "coupling plan" or "coupling chart," (*Koppelplan*) is not clear. It seems to be a new procedure, as certain references to it in other articles would indicate.]

The 11th Battery took on bunker after bunker and successively put them out of action. During the course of this firing it became evident that some of the Soviet bunkers were quite easily handled; others, however, displayed considerable strength in their concrete walls. But all of them were put out of action, and it was not only we artillerymen who were enthusiastic over this fine shooting but also our infantry. While it was in action, the battery received orders to combat other bunkers which at first had not been assigned to it; for example, bunkers 191 and 192 which were operating very effectively on the flank against the assembly area of the infantry. In order to accomplish this it was first necessary to move the observation posts, but in a



short time these troublesome targets were neutralized. Even though we did not succeed in penetrating the thick concrete walls, the observation and firing ports were rendered useless and the crews, some of whom had been killed and wounded, abandoned their positions. It was pleasing to observe how small a dispersion our howitzers had, a sign of the high quality of the equipment and also of the faultless work of the gun pointers.

In our later examination of some of the combatted installations, my attention was attracted by a light bunker—it could be better called a dugout and perhaps it was only a dummy installation—which had a wall thickness of only thirty centimeters and which was quickly penetrated. Because of the camouflage, which the Soviets always know how to employ skilfully, this could not be learned before action was taken against it. The heavy bunkers, however, had a wall thickness of from about 150 to 200 centimeters, which could not be penetrated by the heavy field howitzers. In spite of this, however, the effects of our shells could be called very good. The hits that we had made had considerably damaged the concrete walls in several places. Cracks had been produced and some of the firing ports and observation slits had been blocked by dirt and rock fragments. The effects on the minds of the crews must have been considerable, since great confusion reigned in the interior of the installations. Arms, ammunition, and other equipment, clothing, blankets, and articles of food were scattered in wild confusion and bore witness to the heavy vibration resulting from the firing as well as to a hurried flight of the crews. The approach trenches to the emplacements were skilfully built. These trenches were entirely covered over and were overgrown with grass so that they could not be made out in the terrain.

Thus, while one battery was fulfilling its special mission, a whole cluster of new targets had appeared for the battalion. Along the railway north of Galusinyz an enemy artillery bunker (173) had opened a flanking fire which was proving very unpleasant to the observation and command posts on the Scheinzy hill. The 10th Battery very quickly adjusted its fire, and in a short time was able to put this combat installation out of action by means of a direct hit. Several hits were easily recognizable by the whitish-gray cloud of smoke, and then we perceived clearly through the artillery observer's telescope that dark smoke was coming out of an opening in the bunker and this continued for a long time. Without any doubt we had pierced the walls, and from that time on the gun was never fired from that bunker, which was the best proof of the success of our shot. The 10th and 12th Batteries alternately combatted a number of other targets including an especially troublesome machine-gun nest at the edge of the village of Galusinyz as well as assemblies of infantry. When at 1000 the infantry moved forward

for the attack, there was another short burst of fire by two batteries of the battalion against the south edges of Galusinyz which the enemy was successfully holding.

Thanks to the work of all the artillery, the breakthrough into the Stalin Line was accomplished without very heavy casualties. As early as 1200 two batteries moved up to another position farther forward. In reconnoitering for the new positions I was able, as I have already mentioned, to convince myself personally of the good effects against the bunkers.

Just a day later the attack changed to pursuit again. During the course of this operation, as so often before, the battalion was assigned to the motorized advance detachment in order to break the resistance of the enemy wherever it might be necessary.

On 15 July it was not the heavy artillery alone that had good opportunities to prove its ability, but also the mountain artillery battalions which had been advancing in close cooperation with the infantry, including the light field howitzer battalion which had an equal share in the success.

In concluding, let us quote a divisional order of the same day: "The breakthrough of the Stalin Line of 15 July 1941 is the day of the divisional artillery. The destruction of the numerous enemy fortifications and bunkers were carried out in just as masterly a manner as was the combat of the enemy who appeared everywhere. Most excellent work was done all the way from the artillery commander on down to the last gunner. The entire division acknowledges thankful recognition of this fact."

### Sure Protection for Boundaries Between Units

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article in *Krasnaya Zvezda* 19 June 1943.]

USUALLY each of the opposing sides tries to feel out the boundaries between the enemy's units in order to determine his dispositions, but mainly to try his luck here if it has been decided to attack. That is why our regulations emphasize the exceptional importance of watchfully guarding boundaries. On this must be centered the attention of the senior commander of the force of all arms, the commanders of neighboring forces of all arms and of other units, and also of reinforcing and supporting units.

During the drawing up of the plan of defense it is necessary to keep in mind the protection of boundaries, and the whole preparation should be geared to create favorable conditions for the defense. First of all the defensive zones, sectors, and regions are so distributed as to make it difficult for the enemy to discover the boundaries. It is desirable that these boundaries should not run through those sectors of



the terrain which can serve as a natural line of demarcation. For instance, noticing a dale running into the depth of our disposition, the enemy suspects that it is a natural line of demarcation. If our boundaries are actually disposed in this manner, the enemy quickly finds out about them. No matter how suitable the place may appear for a boundary between two units, the position should not be used if it will indicate to the enemy the place of the boundaries.

Since the boundary is the defense's most vulnerable place, it should not be disposed in a sector of the terrain to which hidden approaches lead from the enemy side. In general, it is necessary to try to have the boundary located where it is apparent that the enemy cannot oppose it by a strong concentration. Of course, there must not be vitally important objectives such as highways or railways at the place of the boundary. Such features must not be permitted even to be near the boundary. In one sector of the front where the Germans broke through to a considerable depth, an important circumstance was that after overcoming a mined sector of the boundary the enemy emerged on a nearby road.

Having laid out the zones, sectors, and regions, it is necessary to take all measures for most careful concealment of boundaries. If, by skilful disposition of combat security and false positions, the real forward edge is expertly concealed, the discovery of boundaries is made difficult thereby. But it is also necessary to conceal the boundaries themselves by dummy positions and obstacles. Besides that, the units located here must always have in view that they may reveal the boundary by their own movements on both its sides. Hence, camouflage discipline must be especially strict.

In protecting boundaries, much depends on how skilfully the combat security and all the units disposed on the forward edge of the defense act against the hostile reconnaissance. Where all efforts of the enemy to feel through us by actions of small parties and reconnaissance by fighting fail, he, as a rule, cannot discover the position of boundaries. Consequently, the task of each unit is the immediate liquidation of any enemy reconnaissance in front of the forward edge. If it is known that the enemy has succeeded in finding the boundaries, it is expedient to make some changes in the system of the defense zone with the purpose of making new lines of demarcation, thus leading the enemy astray.

The protection of boundaries must occupy one of the main places in engineer defensive activities. Here it is necessary to organize strong positions in full depth, even if these positions will not be occupied by troops for some time. In those cases when the command does not designate special units for guarding the boundary, it is absolutely necessary to have organized positions at this point. More than that, it is necessary to create intermediate positions behind the boundary in case the enemy breaks through.

For protecting the boundaries there is created a solid and dense net of mine and other obstacles which are kept under unceasing observation and fire. Units located on both sides of the boundary must always have fire means ready to cover the obstructions.

Concerning fire as a whole, the main thing here too is close cooperation with neighbors. The units forming the boundary must previously agree about their positions, the time of opening fire, signals, etc. Special attention must be given to antitank fire elements. Where the terrain is accessible to tanks, all measures for guarding the boundary have an anti-tank aspect. Depending on the situation, the reserves may be disposed behind the boundary with the task of liquidating breakthrough by enemy tanks, should such a breakthrough be successful.

Commanders of supporting and reinforcing units must be assigned exact tasks in guarding the boundary. It is necessary to plan in advance the barrage and interdiction fires of artillery and massed mortar groups. It is necessary that both the tank and aviation commanders have their plan of action beforehand in case of enemy breakthrough at the limiting point between the defensive zones. In the same way, several variants of counterattacks in the direction of the boundary are worked out. This concerns all units adjoining the boundary, particularly those units directly guarding it, and also the reserves of neighboring units and of forces of all arms. In anticipation of possible counterattacks, passages are left in mine and other obstacles protecting the boundary. At the same time necessary means for quickly closing the passages are prepared.

These measures are carefully thought through during reconnaissance. The senior commander, with commanders of units having a common boundary, and also with commanders of reinforcing and supporting units, decides on the terrain the main questions of organization of engineer activity, creation of obstacles, organization of fire, and anticipation of probable counterattacks. During reconnaissance completely clear decisions must be taken as to cooperation in the matter of protecting the boundary.

As is known, the senior commander designates one of the commanders of adjacent units as the responsible one for the defense of the boundary. This commander oversees the execution of the designated measures. From him must come all the initiative towards the daily perfection of engineer equipment and of the fire system. In case enemy operations are active, he at once communicates with the neighbor to organize resistance. But this in no way removes the responsibility of each commander for both the boundaries formed between his unit and neighboring units. The spirit of mutual help and reciprocal understanding must permeate the relations between neighbors, especially in such very important matters as protection of boundaries. Combat experience knows examples where one side, having

knowledge of the fact that two neighboring commanders of enemy units had not established close liaison, utilized this circumstance for a blow at the boundary and quickly attained success.

The senior commander of a force of all arms, personally and through his staff, must always check the protection of the boundary, striving for excellent cooperation between commanders of units subordinated to him, rigorously stamping out the slightest efforts of any of them to justify inaction by blaming his neighbor.

Decisive importance in the protection of boundaries inheres in the general high degree of watchfulness by troops which are on the defensive. This especially concerns the period of inaction. Nothing is more dangerous than the carelessness from which some units suffer during periods of inaction. Carelessness reduces the troops' firmness against sudden attack. It can cost much blood and cause serious consequences not only where such carelessness prevails, but also in the whole given sector of the front. The task of the command personnel is always to maintain strict watchfulness during defensive action, which will also favorably affect the task of guarding boundaries.

### Street Fighting

[From an article by Lieutenant J. C. Tully in *An Cosantóir* (Eire) August 1943.]

TO THE defense the advantages of street fighting are many. It provides ready-made cover from view, and the material for ensuring cover from fire. It tends to neutralize the attacker's tanks and guns, and on account of the limited fields of fire available and the amount of defensive cover provided, only a comparatively small number of an attacking force can be employed at the same time. Thus, superiority of numbers and equipment of an attacking enemy is to a great extent negated from the start.

Paradoxical as it may seem, street fighting will usually take place anywhere but in the streets. All modern tendencies insist on the streets and roadways being designated as 'killing ground' and completely neutralized both for friend and foe by practically continuous automatic fire. Most advances are made either through back-yards, over roof-tops, or by burrowing from house to house.

To defend a town or village, it is not necessary to occupy and defend every building. Houses should be selected on the outskirts and converted into strongpoints commanding approaches to several points from which the enemy may attack; they should command approaches to each other, so that each house can be enfiladed by straight, cross, or converging fire from other strongpoints. Exact ranges must be known in all directions from each selected house. Thus, if the enemy should succeed in seizing and occupying one of these strongpoints, concentrated fire

from all other points can immediately be brought to bear upon it. The defense should be planned on the creation of a series of concentric rings of strongpoints inside this outer ring.

Bert Levy, author of *Guerrilla Warfare*, gives the following directions for converting a selected house into a strongpoint: "Fortify an entire floor so that you can keep a lookout and fire in all directions. Sandbag all windows. Place sandbags or mattresses around the wall to stop bullets ricocheting. Make loopholes for observation and firing. If you remove a couple of bricks, you will have a fairly good loophole. Make your loopholes at various levels, and make more than you will need. Make some larger and a bit more obvious, to draw the enemy's fire. Next, barricade the downstairs doors heavily and arrange your get-away from the back, over the roof, or by tunnelling into the house next door. Back fences and walls should next be removed. The enemy tries to fight in from back-yards and the rear of buildings. Burn or blow up all buildings that obstruct your field of fire. Dig deep dug-outs in the basement as protection against artillery fire or aerial bombardment. Shore up with beams from the basement to the ground floor. Make a false ceiling of planking and pack the space between it and the actual ceiling with spoil from the dugout; this will strengthen the building and prevent the quick spread of fire."

Initially, the enemy will bomb and shell the town. You will be glad of your dug-out. Immediately his bombardment is lifted, his trained units will speed into the town. You must be ready then and at your post. From then on your job is plain and direct. You will hold this building until you are driven out by an enemy who has fought you hand to hand and toe to toe, and if driven out you will at once, with whatever reinforcements are available, mount an attack on the building under cover of straight, cross, and converging fire from your other strongpoints.

In street fighting there is no opportunity for offensive operations by large units. Street fighting consists principally of the struggle for and the defense of a number of strongpoints. Hence it is the small infantry group that dominates the scene. This group can attain its objective by one means only, and that is by getting to close quarters and fighting the enemy hand to hand. Its indispensable weapon is the grenade. The grenade dictates the distance of the storm—the nearer the enemy the better.

The defense of each of our strongpoints is based primarily on the principle of the counterattack. Attack immediately the enemy succeeds in entering the building, attack when you are driven up to the attic, attack when you are driven out of the building. In this way only will you wrest the initiative from an attacking enemy, and the initiative is fifty percent of street fighting.

There are three main ways in which this attack or counterattack may be launched:



1. From the open—from outside the defended house;
2. From cover—by tunnelling through adjoining houses;
3. By vertical envelopment across the roof-tops of adjoining houses.

I shall attempt to deal with each of these separately.

The attack from the open may be initiated by a covered advance through ruins or rubble created by the bombardment to a point a short distance from the objective. When the group has reached this point two or three men rush the door under covering fire from the remainder of the group and endeavor to shoot and blast their way into the house. Lieutenant General V. I. Chuykov, defender of Stalingrad, gives this advice to novices in such shock groups: "There must be two of you to rush a house, you and a grenade. Both of you should be lightly clad, you without a haversack and the grenade without its shirt. This is how you rush a house: let the grenade go in first and then you follow. Go through the whole house in the same way; first the grenade, then yourself."

Bert Levy gives the following directions for securing entry into a building: "If you are one of those who have to make the initial rush, never charge directly at a door. Throw yourself into a prone position alongside it. Fling your grenade from there, fling another if necessary. Then fire, still outside the door, up and into the far corner of the ceiling, covering about one quarter of the ceiling area with as many rounds as you can pump in quickly. Let another dash under this part of the ceiling and start peppering the remainder while you are reloading. By that time anyone upstairs is either dead or dancing very hard. When you have reloaded, dash for the stairway, covered by the rest of the party, shooting ahead of you.

"By this time the remainder of the group will have started entering the house. Three or four men can begin to mouse-hole into the rooms adjoining the hallway while the others are securing the upper floors. Mouse-holing is simple work with a pick or crowbar. Three or four quick strokes will make a hole in an interior wall. Toss a grenade through the hole, enlarge it and spray with automatic fire anyone who may be left in the room. Enlarge it still farther, enter, and proceed to do the same to the next room.

"In all these operations the advantage is with the defense, for it is much easier to drop grenades downwards than to throw them up; it is much easier to fire down through floor-boards than up through ceilings, which come to pieces and blind you; and 'in extremis' it is much easier to jump downstairs and put your feet in a man's face than to jump upwards and do the same thing."

The second form of attack on a defended strong-point is by tunnelling from adjoining houses. This is done with practically complete immunity from

fire, but it is a slow process. It consists of mouse-holing from room to room and from house to house until the objective is reached. Call the room into which the enemy will break the "battlefield room." Then the ideal defense to this mouse-hole attack is to occupy the room above and the rooms round this room. Make loop-holes around it, and when the enemy gets in, fire fast and low.

The third method of attack, that over the roof-tops, is the more dangerous during the initial or approach stage. Here the attackers should come under heavy fire from the adjacent strongpoints. Once they gain access to the occupied house, however, and succeed in occupying the attic floor they have the defenders at a considerable disadvantage.

The one thing common to these methods of attack, and the absolute essential for success, is speed. Never dawdle. Don't pause to think. Act instinctively, think with your grenade, your rifle, revolver, or shotgun. You find yourself in a labyrinth of rooms, all pregnant with danger. Sling a grenade into that dark corner, fire a burst through the ceiling, and rush on. Never pause. The enemy may be planning a counter-attack. He knows how to fight as well as you, but you have the initiative, and while you keep moving you retain it. Don't give him a minute. Rush on, use your grenades, your rifle, revolver, your boots, your fist, or your shovel, and drive him, dazed and blinded, out of the house.

In street fighting the effectiveness of tank and dive-bomber is to a great extent negated. A tank cannot plough through a row of houses. In a town, infantry can fight a tank from hidden positions at point-blank range. To the tank, a street is a long, dangerous defile where the enemy is close on either side and in position also to drop bombs and incendiaries on the tank from above. In Warsaw, civilians and half-trained recruits threw Reinhardt's Panzer Division out of the suburbs in twenty-four hours, and they stayed out until the main German army arrived some days later. A town can be bombed before it is attacked. As soon, however, as the enemy enters a town his bombers will have to be called off, for street fighting soon grows so confused, and there is so much smoke from burning buildings, that bombers cannot operate as close support.

In conclusion, let me quote Tom Wintringham: "Street fighting is mainly infantry fighting, but it is not mainly street fighting. It is mainly fighting within buildings or from within buildings."

### Antiaircraft Defense of Battle Positions

[Translated for the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article by Lieutenant Colonel M. Sliusarev, Soviet Army, in *Krasnaya Zvezda* 7 July 1943.]

BATTLE lessons learned in recent engagements



prove that adequate antiaircraft defense of battle positions is very important for insuring the success of both the attack and the defense. No matter what the situation is, commanding officers and their staffs should take all measures necessary to defend our battle lines from enemy air attacks.

Recently, our troops were on the offensive in one of the sectors of the front. Assaulting a belt of enemy fortifications at different points, small and large units of our forces continued to improve their positions. Defending the hills dominating the region, and other strategically important points, the Germans offered fierce resistance. They concentrated rather large forces of infantry and tanks, made local counterattacks, and raided our battle formation from the air. In most cases, however, our units firmly held their positions, beating off all attacks.

It is interesting to analyze the tactics of the German aircraft engaged in these operations. The enemy was unable, during the first day, to make full use of his aviation. By the time small groups of enemy bombers and fighters appeared over the battlefield, our forces were already in possession of the advance positions of the enemy. Although each enemy group consisted of not more than twenty-five planes, the number of flights reached 500 by the end of the day. This, however, had no marked effect on the course of the battle. Our units consolidated their positions, and the antiaircraft artillery alone accounted for fifteen German bombers and fighters.

On the second day stronger formations of enemy planes from more distant airfields began to appear over the battlefield. Aerial bombing of our front lines and artillery positions increased in force. The Germans used both dive-bombing and level-bombing tactics. The effectiveness of the German attacks was still very low, and their aircraft losses kept mounting. Our antiaircraft defenses accounted for twenty planes, fourteen destroyed and six damaged, and a considerable number of Junkers bombers were brought down by our fighters.

The enemy continued his aerial operations during the following days. Ju-87's, protected by fighters, attacked our lines in formations consisting of as many as 120 planes. But even these blows were ineffective.

On the sixth day our antiaircraft defenses forced the enemy to change his tactics. Previously, the German bombers attacked small sectors of our front after the sky had been cleared of our fighters, usually drawing our fighters away with Me-109 planes. Formations of sixty to eighty Ju-87's were frequently used to dive-bomb in a "ribbon" formation a single artillery battery. But this time the bombers came over in star formations with groups of planes flying at different altitudes. They covered a wide area with bombs of all sizes, weighing from twenty-five kilograms to a ton. No advantages were gained by these new tactics, for our antiaircraft

guns, infantry weapons, and pursuit planes continued to inflict increasing losses on the attacking aircraft.

After some time the action subsided in this sector of the front, and our staffs took inventory of the operations. The Germans lost several hundred planes; ninety-five of them were brought down by the antiaircraft artillery and ten by infantry weapons. Our infantry, artillery, and tank units suffered only very small losses. Our casualties per day never exceeded ten to fifteen men.

The ineffectiveness of enemy air attacks can be explained by the basically sound organization of our antiaircraft defenses, both in the attack and during the period of consolidating the captured positions. Intelligent use of camouflage and the ability to dig in quickly were important factors in keeping our casualties low. All types of weapons were used to fight the German planes: antiaircraft artillery, pursuit planes, machine guns, antitank rifles, and concentrated rifle fire.

The antiaircraft defense was organized according to the following plan: When a group of enemy bombers approached our advanced positions, it was immediately met by our pursuit planes, which broke up its formation. Then the medium antiaircraft artillery opened fire. Its main task was to prevent the leading planes from bombing their targets. The light antiaircraft batteries went into action when the planes after abandoning their formations, were still in diving position. The infantry units, trained in fighting attacking planes, concentrated their fire on the bombers when they were pulling out of the dive. It is obvious that such a powerful defense always kept the enemy from executing his plans. In most cases planes were forced to drop their bombs at random and flee.

The enemy air force suffered heavy losses and did not accomplish what was expected from it. We should not, however, draw the conclusion that the organization of antiaircraft defenses in this battle was perfect and that all defense possibilities were fully utilized. There were examples of good firing by the antiaircraft units of Major Kukharev and Senior Lieutenant Novokhatko, and of efficient use of infantry weapons by the units commanded by Colonel Vasilenko. A number of serious deficiencies found in some units cannot be disregarded, however.

No combat mission can be successfully accomplished without a well organized and uninterrupted reconnaissance. Although this truth is beyond dispute, there are careless commanders of artillery, infantry, and other units who consider "the air" to be out of their sphere of interest. They think that fliers and antiaircraft men are in charge of "the air," while they stick to the ground. Such commanders approach all problems of air observation, warning, and communication with a superficial and formal attitude.

In recent engagements some company commanders

failed to post air observers, and certain battalion and regimental commanders did not consider it necessary to establish VNOS [a Russian abbreviation of "Service of Aerial Observation, Alarm, and Communication"] posts. This is all the more surprising because these units had a number of enlisted men and noncommissioned officers trained with the VNOS Service. But nobody knew what had happened to these specialists. Upon return from the school, they were probably absorbed by various companies, platoons, and squads without any consideration of their new qualifications. And in the end they were simply forgotten. Such thoughtlessness led to most deplorable results. In one unit, for instance, not a single VNOS post was established during a recent battle. The chief of staff decided to depend entirely on the observation posts established by the higher commander.

Commanders sometimes contend that the reconnaissance plane is the only reliable means of warning against surprise raids. True, a plane can observe the entire battlefield and sneak up to the enemy airdrome at high altitudes. But air reconnaissance must always be supplemented by careful air observation from the ground. Reconnaissance planes are often unavailable, while the ground services of VNOS, working according to an intelligently coordinated plan, can always warn our units of the impending danger and let the antiaircraft crews and fliers know in time of the approaching German bombers.

Air observation must be organized throughout the entire depth of battle formations. On the battlefield and in all platoons and companies, without exception, there should be special air observers. In battalions, regiments, and divisions, the VNOS posts should be connected by telephone and radio. All posts must be numbered to facilitate their identification when a warning is given.

Air observation is only the first stage of the extensive staff work necessary for the organization of antiaircraft defense, for it is also essential to place antiaircraft weapons so that they can defend the ground forces and at the same time inflict maximum losses upon the enemy aircraft.

The antiaircraft units become a powerful force when they are able to react quickly to changes in situation. They must move rapidly when required to organize defenses in new regions and be able to adapt their tactics to any type of enemy attacks. There are many examples of outstanding actions of antiaircraft units which, by changing their positions unnoticed by the enemy, brought down many planes from aerial ambushes.

Antiaircraft defenses protect the battle formations of our forces throughout their entire depth. Batteries of antiaircraft artillery usually take up positions one to three kilometers behind the advance positions. This is done to engage the enemy aircraft as they approach the forward edge of our

defenses. Antiaircraft guns are placed up to 500 meters behind infantry lines and at closer distances, and are used to fire at the diving planes.

Infantry weapons are also important for protecting troops against air attacks. Several hundred planes have been destroyed by our machine gunners and antitank riflemen, and by infantry riflemen who mastered the difficult art of firing at aerial targets. Unfortunately, many unit commanders still distrust infantry weapons as a means of antiaircraft defense. This distrust results from the improper use of rifles, machine guns, and antitank rifles. On two different occasions I had an opportunity to observe the following. A German reconnaissance plane appeared over the positions of an infantry regiment. A terrific fire from all types of weapons was opened at once, although the plane flew at a high altitude. Our men were shooting at a scarcely visible plane with rifles, machine guns, and even submachine guns. Obviously, such disorganized firing had no effect.

The situation is entirely different in units where special infantry detachments for antiaircraft defense are well organized, and where the company and battalion commanders, as well as regimental chiefs of staff, plan the antiaircraft defenses intelligently. In the units commanded by comrade Vasilenko, his commanders designate daily a number of machine-gun and rifle squads for antiaircraft defense. All the others must take cover during the raid. All personnel so assigned are systematically instructed in the tactics used by enemy bombers and pursuit planes.

In a unit operating in our section of the front, the field artillery batteries have been adapted for antiaircraft defense and are very successful in fighting German bombers. The infantry is also well organized. The company or battalion commanders assume personal control over the rifle and machine-gun fire, and aimless shooting is thus avoided. The enemy aviation is not dangerous to the troops who are able to employ their antiaircraft defenses as a means of organized destruction of enemy bombers.

### Japanese Principles of Antitank Defense

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Portuguese translation made by 1st Lieutenant Clímedes Rego Barros, Brazilian Army, in *A Defesa Nacional* (Brazil) April 1943.]

IN ANTITANK defense the aim is to put tanks out of action, or at least to neutralize their effect. For the purposes of this defense it is necessary to know the various weak points of the types employed by the enemy.

An attack by tanks depends on:

1. The terrain: natural obstacles (water courses,



brushy and marshy areas, etc.), or artificial obstacles (ditches, antitank traps, etc.).

2. Surprise.

3. The number of tanks employed.

4. The temperature of the atmosphere, which affects not only the morale of the crew but also the functioning of the motor itself.

5. The conditions of visibility (cloudiness, rain, snow, etc.).

6. The degree of training or efficiency of the drivers.

For a force of soldiers organized defensively, the accuracy and speed of the messages sent by the observers located in the observation posts is of primary importance. They must not only announce the direction but also the magnitude of the attack, and it will be immediately transmitted to the command. A force may be unnoticed by the tank crews if it makes use of camouflage and concealment which frequently permits a successful surprise attack. The messages should therefore be sent with the greatest rapidity and with the use of all the means available.

The infantry, in addition to its accompanying weapons, should be provided with antitank cannon and mortars.

In the case of portable weapons, results are obtained only when their shots, fired at short range, are directed at seeing slits, ports, optical apparatus, etc., with the object of injuring the crew. In the battles at Shanghai, a few tank attacks were stopped by the use of rifles and machine guns. A minimum of one combat group per tank is required.

Protection against mechanized equipment is obtained by means of constant vigilance for the purpose of avoiding a surprise attack. Antitank cannon should open fire only at an approximate distance of 1,000 meters.

The location of sentry posts is not arbitrary. It is a function of

1. The field of vision which should be as broad as possible.

2. The speed of which the attacking vehicles are capable.

3. The time ( $t'$ ) required for the message to reach the command.

4. The time ( $t''$ ) that will be lost in bringing the weapons of defense into position.

The minimum distance at which these observers should be placed may be obtained by the formula  $L = 300 \times (t' + t'') + 1,000$ .  $L$  being the distance between the sentries and the troops, 300 the mean speed of the tanks (meters per minute),  $t'$  and  $t''$  expressed in minutes, 1,000 the mean distance for the opening of fire.

It is not always possible to pick out locations which will satisfy all these conditions. If it is not possible to communicate directly with the defensive positions,

intermediary posts should be installed with rapid means of communication (blinker apparatus, flags, etc.). Observation depends on the terrain and the atmospheric conditions. Experience has shown that on clear days it is possible to spot tanks at a distance of 4,000 meters when field glasses are used, and at a distance of 1,400 meters with the naked eye; in cloudy weather, at distances of around 1,600 meters [600 meters?]. At night, vision is replaced by acoustic apparatus. On quiet nights and in level country the noise of motors operating in the normal manner can be heard at a distance of from 1.5 to 2.0 kilometers, and of motors equipped with mufflers, only at a distance of from 300 to 400 meters. Observation has shown that it is impossible to locate tanks when the enemy is making use of artillery or aviation at the same time.

Nowadays, the attack of armored equipment forms part of the instruction of the infantry. In this work, surprise should always be aimed at at the critical moment for the vehicle, that is, when the latter is forced to reduce its speed or even to halt, either during the crossing of obstacles or when firing. Precautions should be taken not to interfere with the action of the antitank weapon.

Each company has at its disposal a tank-hunter group. Artillery units also have at their disposal small units of these specialists. In exceptional cases the "hunters" are grouped into platoons directly subordinated to the battalions. The groups are equipped with weapons and other equipment suitable for the attack and destruction of the machines. Thus, every man carries along a "T" mine and a smoke grenade in addition to several other pieces of equipment not only for the purpose of impairing the vision of the tank crews but also for fulfilling his mission.

The attack with mines and grenades can be effected in three ways:

1. The "hunter" advances from cover to cover in the direction of the attacking tank until he is in the dead angles of its weapons. When at a distance of five meters from the tank he hurls his mine (to which is attached a cord) and attempts to drag it so that it will be crushed under one of the treads.

2. The "chasseurs" plant their mines in passages through which the tanks will be obliged to pass.

3. The mines are disposed along the length of a fifty-meter rope at a distance of thirty centimeters from one another. The group drags the rope in the direction in which the attacking tanks are moving.

There is need for a previous knowledge of the matériel employed by the enemy, principally in order to know the distance at which one will be protected from its fire.

For the purpose of blinding the crews, use is made of dirt, lime, or smoke grenades. This will prevent them from seeing for but a few moments.



The smoke grenades with a cord attached to them can be thrown at the weapons and antennas in order that they may catch there and follow the tanks as they move. In this way the tanks will be surrounded by a thick artificial fog which will last several minutes. Dirt, mud, or lime are thrown in paper sacks to cloud the telescopes and optical apparatus or to stop up the vision slits. The "hunters" are trained in such a manner that they are able to make these throws with great precision at distances of over ten meters.

If these means attain the desired result they are followed by a direct attack on the tanks, mainly from the rear, destroying and damaging with violent blows of picks and axes the weapons, the rotational system of the turrets, the sights, vital parts of the motor, etc.

If there are any open ports, the crew will be killed by pistol fire. Use is commonly made of shelter halves in these attacks for the purpose of impeding the vision of the crews. Naturally, these attacks are carried out only when the tanks are not accompanied by supporting forces or when the latter are delayed by the defense, and when the action occurs in terrain that is more or less covered.

Tanks are stopped and even put out of action by means of sticks of wood eight centimeters in diameter introduced between the treads and wheels, and by pieces of iron from three to four centimeters in thickness in the joints of the track shoes.

### **Actions of a Tank Regiment for the Encirclement of the Enemy**

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article by Lieutenant Colonel K. Noss, Soviet Army, in *Zhurnal Avtobronetankovikh Voisk* (Journal of the Armored Forces) May-June 1943.]

A TANK regiment of the guards, engaged in the vicinity of Stalingrad as part of a mechanized unit of all arms, was assigned the mission of making, during one night, a forty-kilometer march with a tank-borne party (a company of automatic riflemen) and an attached antitank battery, and after capturing, in the rear of the enemy, a collective farm and a road crossing northeast of the populated place N-J, it was to prevent the enemy columns from retreating to the south (see Figure 1).

The regimental commander and his staff carefully studied on the map the route of movement, made the march estimates, and determined the places of possible encounters with the enemy.

For the purpose of reducing the column of transport vehicles designated to carry ammunition and food, the regimental commander ordered each tank to carry additionally eight boxes of shells and three boxes of cartridges, and also each tank crew to carry along five days' food rations.

In the first rear echelon [literal translation] there was motor fuel for one refill, and there were also two medical vehicles and a kitchen with two days' supplies. In this manner the regiment could fight for three or four days separated from the main forces. Before the departure of the regiment, terrain exercises were held in the cooperation of tanks and accompanying guns in offensive combat, while the automatic riflemen trained in the actions of a tank-borne party.

Driving with their lights out, the regiment, after breaking through the enemy defense, emerged in the deep rear of the Germans and cut off their routes of retreat in that direction. The advance party which was sent forward, silently removed the enemy security posts in the collective farm and captured the Germans by surprise. Many of them, suspecting nothing, came out of the houses unarmed and were immediately captured by our automatic riflemen. At the same time elements of the regiment captured the road junction at the Hill 217.0 and, by fighting, the populated place N-J, where they organized all-around defense. The tanks were disposed along the probable directions of the movement of the retreating enemy columns. In front of the tanks, automatic riflemen were placed on the defensive. An observation net was organized in order to send timely information to the regiment on the approach of the enemy reserves and retreating columns. Reconnaissance patrols were dispatched to a distance of fifteen to twenty kilometers in the most important directions.

For the reinforcement of the defense, the entire personnel was employed, including clerks and cooks, which increased the combat strength.

It was possible to learn from captured prisoners the signals established by the enemy for liaison with aviation and the rules governing the use of signal panels. We used this information to advantage. As the enemy aircraft appeared, the recognition panels were spread out and the enemy aviation took the elements of our regiment to be their own.

On the following day, the enemy began a speedy retreat in the southern direction under the blows of our units from the front. Unaware of the fact that our tank regiment had cut off their routes of retreat, the enemy moved in columns without security. On the line, Farm K—Hill 217.0, the enemy columns were met by a powerful rifle and machine-gun fire of tanks and automatic riflemen hidden in ambush. The enemy attempted to deploy his artillery which was proceeding within the column, but our tanks, emerging from behind concealments, attacked the columns at great speed and with their caterpillars crushed the enemy guns and their crews. Throwing away their arms, the Germans ran to the collective farm. At this time, new enemy columns were coming up to the same place from the north and the east.

At the collective farm there was a reserve group of our tanks, which suddenly attacked the approach-

ing enemy columns from the southeast. Inasmuch as the enemy was not prepared to offer resistance, the sudden attack caused panic in his columns. Thousands of German soldiers and officers rushed into the hollow to the north of the collective farm where they fell under the destructive cross-fire of our automatic

Reconnaissance by staff officers and unit commanders determined the regions of the enemy's artillery positions, and also routes along folds of the terrain for going around his artillery batteries and for reaching his rear. Missions were assigned to unit commanders on the spot.

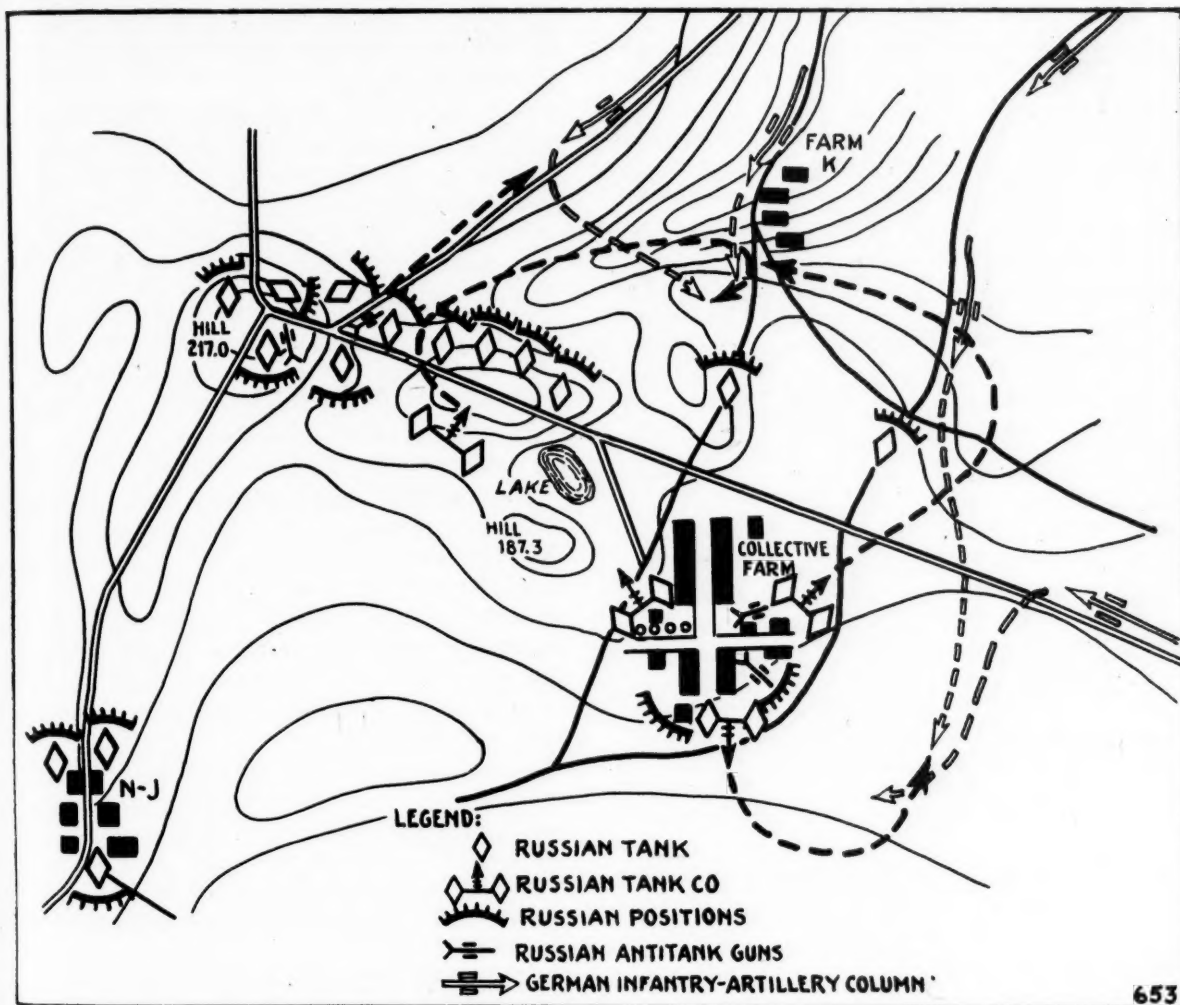


FIGURE 1.

riflemen and tanks which were disposed in the collective farm and on the heights northwest of the lake. The retreating enemy columns were completely defeated, and the mission assigned to the tank regiment was successfully executed.

Having suffered a defeat on the line of the populated places G and K (Figure 2), the enemy was hurriedly preparing a new defensive line in depth, to which he sent two picked infantry regiments, twenty-three guns, and up to thirty mortars.

A mechanized unit was not able to capture the German defensive line on the move, in spite of the fact that the enemy did not as yet have time to erect strong defensive works. The tank regiment, jointly with the mechanized unit, was ordered to break through the enemy defense and to capture the populated place P.

The regiment attacked in two echelons. The first echelon, after having detoured the enemy on the flanks, attacked his artillery positions from the rear, having as its next objective the populated place P. The second echelon, with the infantry behind it, was engaged in destroying the remaining enemy firing points.

When the tank units reached the positions of departure, the enemy counterattacked, leaving his trenches. Taking advantage of this circumstance, our tanks, firing intensively and supported by tank-borne automatic riflemen, attacked the counterattacking enemy at maximum speed. The Germans did not withstand the attack and began to retire without stopping in their prepared trenches.

The enemy artillery could not successfully conduct fire due to the fact that our tanks were moving under

the protection of folds of the terrain. Our tanks reached the rear of the enemy artillery positions without losses. The gun crews started to run, abandoning their guns. Following behind the tanks, our

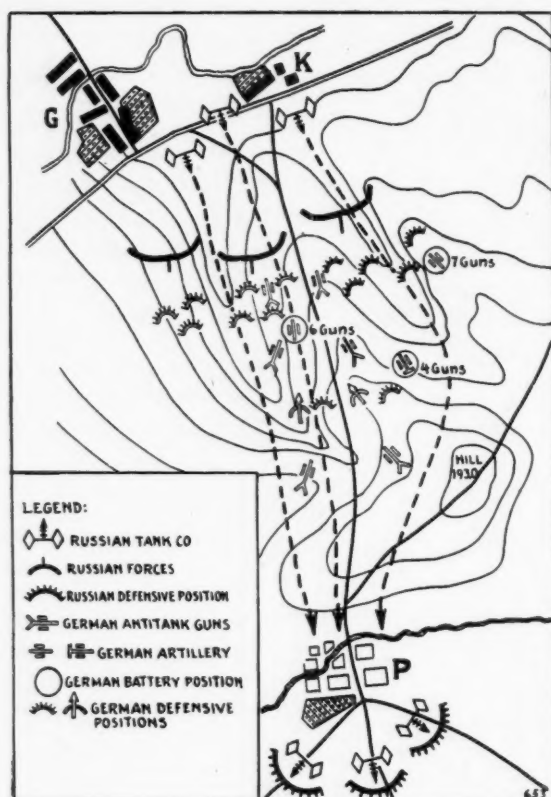


FIGURE 2.

infantry cleared the trenches of the remaining enemy forces.

As a result of this battle two infantry regiments were defeated, the greater part of the personnel being destroyed or captured; also captured were twenty-two guns and much ammunition and matériel.

The examples given here are characterized by boldness combined with sober calculation in the actions of a tank regiment. In the first example, when the enemy was retreating and was partly demoralized, the tank regiment was boldly thrown into great depth in the enemy's rear in order to intercept the probable routes of his retreat. The speed of the actions of the tank regiment assured the suddenness of its appearance in the vicinity of the collective farm where the main enemy forces had to retire, and this aided the complete defeat of a large force.

The second instructive example illustrates the successfully selected moment for attacking the enemy at the time when he went over to the counterattack and left his prepared defensive works. This made it possible not only to defeat, without losses, his counter-attacking group, but also, in pursuing it, to capture the trenches without any particular resistance and to

destroy the enemy artillery in their firing positions. The careful preliminary preparation of the attack and the organization of cooperation with the infantry played not a small part in this action. The tank personnel, having studied the most convenient approaches to the enemy's artillery positions, drove their tanks confidently, made use of the approaches, and without suffering losses from hostile artillery fire emerged in the rear of the batteries and successfully attacked them.

In the given case, the conditions of the terrain and the situation which developed permitted the tanks to act at some distance from the infantry for the purpose of silencing the artillery. The promptness of the decision in combination with the sober estimate of the situation decided the success of the action of the tank regiment.

### Physical Development Centers

[From an article in the *Journal of the Royal Army Medical Corps* (Great Britain) October 1943.]

THE ARMY has always stressed the importance of good physique and in peace-time has been in the position of being able to choose to a large extent the material on which it would work. In war-time, however, the problem is quite different and it becomes essential to utilize to the full all available material. The production of good physique from the varied types available becomes a difficult and more technical problem.

During the Great War, 1914-18, we find attempts being made to improve the physique of lower category men by the formation of "Recruits Distribution Battalions," one of the functions of which was to train lower category men in the hope of up-grading them after a three months' course of physical training.

In May 1937, No. 1 R.P.D.D. (Recruits Physical Development Depot) was formed at Aldershot in connection with the Army School of Physical Training. The object was to give a course of pre-service training to certain men who had been rejected for service on account of not reaching the required medical standards, chiefly in regard to weight. The results of training were so satisfactory that No. 1 R.P.D.D. moved to Canterbury in November 1937, and No. 2 R.P.D.D. was formed at Scarborough.

In the present war we have been faced with the urgency of mobilizing all our available reserves and in 1941 the first of the new Physical Development Centers was formed.

Its function was to make A 1 material out of men who had been placed in Categories A 2, B 1, and B 2. Physical Medicine Specialists in Commands were called upon to select such of these men whom they considered remediable and who were not more than thirty years of age.



Men selected were sent to the P.D.C. (Physical Development Center) for a two months' course of training. The Center could deal with 500 men every two months and the program of work consisted of carefully graduated physical training of general type combined with more specialized remedial physical training directed to the particular disability from which the man was suffering.

Under the supervision of a Specialist in Physical Medicine the men were grouped in classes according to disabilities and Army Physical Training Corps instructors especially trained in remedial physical training carried out specially graduated exercises. It was possible to give a considerable degree of personal supervision to the trainees and, in addition, facilities were available for the individual treatment of different conditions by chiropody, massage, electricity, and resisted exercises by the pulley and weight system of muscle re-education.

It was recognized that *complete* success could be obtained only by complete rehabilitation. The object in view was not merely the restoration of the man's disability but the production of an individual who was adjusted both mentally and physically. To this end talks, lectures, education, and debate were introduced into the program. Such periods carefully spaced between the periods of more active military and physical training served the double purpose of providing mental stimulus and encouragement along with physical rest and relaxation.

Careful supervision of meals and a personal interest in the man shown during off-duty time created an atmosphere such as is found in any unit of high morale and was removed as far as possible from the hospital or treatment center environment.

The final up-grading depended on a man passing certain functional efficiency tests of marching, running, etc., so that his final category was assessed on function.

The results were so successful, showing an average of seventy-five percent of men up-graded to A 1, that in May 1942 a second 500-P.D.C. was opened followed by a 1,500-P.D.C. in May 1943.

The problem dealt with underwent a slight modification with the institution of the General Service Corps in 1942. It was found that many of the recruits presenting themselves at Primary Training Centers were under-nourished and under-developed.

They were of the A 1-minus type, i.e., potentially A 1 and suffering from no definite defects but liable to break down under routine training unless such training were very carefully supervised and graduated.

Physical Development Centers provided excellent graduated training facilities for these men where their physique could be improved under ideal conditions. This type of case has responded most successfully to this type of training and the results are most encouraging to all concerned.

Fifty percent of the vacancies at P.D.C.'s are available for this type of case from Primary Training Centers. Of the remaining fifty percent of vacancies, twenty-five percent are for men of medical categories A 2, B 1, and B 2 from Primary Training Centers and the remaining twenty-five percent for similar category men from Field Force units.

Up to quite recently men were selected from Primary Training Centers during the first fortnight of their entrance into the Army but now it has been agreed that men may be selected from any stage of Primary Training or from Corps Training provided they are considered capable of being improved by a Specialist in Physical Medicine.

In addition the qualifying age for admission to a P.D.C. has been raised to thirty-five and it is hoped that these measures will help to reduce to a minimum the numbers of men arriving at the stage of Field Force training who are not physically capable of undertaking the work of the unit.

It would seem that the future of Physical Development Center work is assured. The success they have achieved would seem to warrant such a course of pre-service training for all men joining the Army.

A man's actual category would be determined in function, any minor physical defects corrected, and his general physique balanced by specialized and graduated training.

### German Air Tactics in Russia

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article by Lieutenant Colonel N. Denisov, Soviet Army, in *Krasnaya Zvezda* 12 June 1943.]

RECENT German bombardment aviation tactics reveal a tendency to employ heavy massed blows delivered simultaneously on a narrow sector of the front by numerous groups of aircraft. Striving to achieve surprise by means of air maneuver, the Germans occasionally employ independent bomber raids without accompanying fighters. In this connection they have changed several times the combat formations of their bombardment groups. Typical at the present time is a group of Junkers or Heinkels consisting on the average of thirty to forty planes, flying in a compact formation. Depending on the nature of the target (the area it occupies) these groups fly either in wide formation or in line ahead, nine to twelve aircraft in each group. In some instances the number of bombers in the group is increased to sixty or eighty.

Quite evidently this method has been adopted because of the activity of our fighters who in large aerial battles tie up the principal part of the German fighter aircraft. Therefore the enemy is trying to compensate for the lack of fighter support by increasing the number of his bombers whose flights are organized on the principle of close mutual fire

support between the individual aircraft and the groups. It is not an easy matter for our fighters to break up the compact formation of a large number of bombers into small groups in order to destroy them in detail. However, experience shows that through the correct conduct of combat it is possible to handle these large groups.

In one battle, events took place as follows. At first our air patrol encountered thirty-five Junkers. Approaching the target, these enemy aircraft took up a column formation with no more than 100 meters between the elements of three planes each. Leaving a part of his fighters for protection, Major Shmelev led the assault group into the attack. Inasmuch as the German combat formation was spread out, our aircraft attacked the enemy in pairs, in several places simultaneously. Firing their machine guns at short distances, our planes forced the Germans to swerve, deploy, and turn back. Our air patrol pursued the enemy until the entire Junkers group was completely dispersed.

Several minutes later thirty more German aircraft appeared in the same vicinity. They flew in a close, compact formation. Since he was below the Germans, Major Shmelev and his group gained altitude, and then with the combined forces of his patrol he attacked the very center of the German combat formation. This concentrated blow immediately disabled several hostile aircraft. The Germans began to lose their mutual fire support and several minutes later were forced to disperse, even coming down to low level flight. During the pursuit several additional German aircraft were shot down. This double victory over strong groups of bombers is distinguished by the fact that Major Shmelev's patrol consisted of only a few fighters. Their success was the result of tactically correctly executed attacks, short range fire, and wide employment of the vertical maneuver.

Recently, German bombardment aviation engaged over the battlefield has been employing small groups of planes which rather frequently attack our ground troops from low altitudes or grazing flight. For this purpose the Germans employ their somewhat modernized Junkers 87 which has been called by them the "antitank plane." This plane carries two automatic cannon and its speed has been increased to 320 kilometers per hour. Its range also has been increased. These attacks call for countermeasures by our aviation and antiaircraft defense, including the method of "barraging" of air patrols at low altitudes. Our Ilyushin-2 planes, whose fire power is great, are employed for fighting the German assault planes. At the same time all the infantry fire elements participate in action against low-flying enemy aircraft.

The German tendency to employ aviation in mass is expressed not only over the battlefield. During recent times the majority of air attacks on our lines of communications, railroad junctions, and cities, has been by successive raids by heavy bombardment forces.

In the daytime the Germans fly in echelons of as many as 100 planes and sometimes even more, at night they fly either in small groups flying individually or one behind the other. Large forces are sent against the principal targets.

Participation of strong enemy air forces in these raids places a number of responsible tasks on all the elements of our antiaircraft defense, requiring a well organized system of antiaircraft fire, cooperation between antiaircraft artillery and fighter aircraft engaged in the defense of the given objective, cooperation with neighboring elements, active and aggressive tempo of aerial combat, skilful command, and timely increase of forces from available reserves. To repel a raid by German bombers on a city or a railroad center is not just one short battle. Frequently it is a major engagement lasting uninterruptedly for several hours.

### The "Hand-Trunk" Breaks Its Way Through

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article in *Die Panzertruppe* August 1943.]

THE "HAND-TRUNK" (*Handkoffer*) is made up out of the field train [supply train] and is the fast detachment of the I-b [Supply Officer]. It is always ready for action and is employed in those places where the men are in need. There is no existing standard relative to its composition but it must be so calculated as to meet the needs of the fighting troops. The "hand-trunk" contains all the essential supplies needed for the fighting forces. There are, among other things, motor fuel, ammunition, food, and the most essential replacement parts.

The following action story throws light on the employment of such a "hand-trunk."

When a year ago the Soviets began their great offensive, our grenadiers were engaged in hard defensive battles against an enemy who was superior to them both in numbers and in equipment. This was especially true in the area around Kharkov. Not until the pressure became too strong did our forces withdraw, fighting according to orders and inflicting great losses on the enemy. In hurriedly constructed strongpoints, even when surrounded, they tied up large groups of the enemy's forces during the winter. From these hedgehog positions they defied all attacks. Day by day it became harder to maintain supplies for these men. Even our magnificent Junker planes were no longer able to bring supplies to the cramped areas our forces occupied, at times no more than a square kilometer. They had no heavy weapons, yet in spite of this their fighting spirit remained unbroken.

Among these brave men were the occupants of "T." They could have fought their way back to the main line of resistance some fifteen kilometers to the



rear, but there was a burden on the mind of every man—"What will become of our severely wounded comrades?" For this reason they held the position, and if necessary they would have held it to the last man.

At this point fresh formations were thrown into the fight in order to halt the Soviet advance. A small combat group consisting of about fifteen armored combat vehicles was to fight its way through to relieve their encircled comrades. But the men in these vehicles did not suspect the difficulties they would encounter, and they did not realize that there were already four hundred wounded men in the strongpoint. And so for six days this combat group shared the fate of the encircled force.

The men of the combat train, accustomed as they were to pushing on ahead to the combat echelon even in the most difficult situations, were this time obliged to wait in compliance with orders. It was an impatient wait, until one day the order was given: "Get the combat train ready and push through to 'T.'" Like a flash the order went through the ranks of the men who long since had become one in combat activity with the men of the motorcycle reconnaissance and the combat engineer platoons.

In eighteen hours' time the strongpoint at "T" was to be evacuated, our comrades there were to be supplied with ammunition and food and the vehicles with fuel, and the four hundred wounded were to be brought back.

Only the most important and absolutely necessary things were to be taken, in order to hold this supply train down to the smallest limits possible. It was to be able to fight its way through by combat if necessary.

First, the front, which was fifteen kilometers in depth, had to be rolled back. For this purpose a combat group was prepared consisting of tanks and tank grenadiers or personnel transportation vehicles. The combat train was to plunge after them and push its way through with the flank protection afforded by them. Six tanks, motorcycle reconnaissance forces, one group of assault engineers with explosives, a fuel, ammunition, and food echelon, one ambulance train, and fifteen empty trucks were available for this mission.

Late in the evening this armed "hand-trunk" moved forward and continued as far as the collective farm two kilometers south of "L." The vehicles were strung out with long intervals between them, for the Soviets were sweeping the terrain with their artillery. Making use of all the cover that was available, it felt its way forward, for it could not afford to lose a single vehicle. Our motorcycle reconnaissance gave us valuable assistance during this night march. More than ever, every man was aware of his important task.

During the course of the preparation at "L," in the gray light of dawn, the situation was stated in de-

tail to the men. Every one was aware that it would be hard to fulfil the mission. Nevertheless every one was proud to be able to take part in it.

At about six o'clock the train started on its way after the combat echelon had proceeded on ahead. Not an order was sounded. All the men knew their tasks and were aware that combat echelon and combat train, especially in an armored formation, form a unit—that the difference between them lay only in the nature of their tasks.

The tanks and the tank grenadiers were already engaged in battle, and they now swung out to the right and left in order to provide flank protection. The combat train followed close after them. The motorcycle reconnaissance detachment with the vehicle of the train commander and two tanks now formed the advance unit. It was followed by the engineer platoon on prime-mover trucks with the supply echelon, ammunition, motor fuel, food trucks, and ambulance train. The remaining four tanks provided security on the right and left.

Thus the convoy approached the village of "T." Like the protecting vessels of a convoy, the small, fast, and highly maneuverable Type II tanks swarmed about their precious convoy, while the trucks, strung out with long intervals between them and making use of every rise in the terrain in order to escape the eyes of the enemy, drove on with all their speed toward their objective.

At the outset our flank security drew fire. However, this did not last long when we were recognized. Shells from antitank cannon and artillery fell between us, but the Soviets were not able to make out their targets well. We wisely avoided the highway which led to "T." We stopped once again behind a rise. "T" could not be more than two kilometers away now. We passed over the hill in close formation, then fanned out and followed hurriedly after the motorcycle reconnaissance detachment that was leading the way. "Get through, regardless of cost!"—those were our orders.

The closer we approached the village, the stronger the fire became. But as far as we could see, the column was following. The leading motorcycles were already disappearing. The village was situated in a narrow valley and it was not until the last moment that we caught sight of our comrades who, in spite of the enemy fire, leaped out of their trenches, their faces bearded. There was no halt for us. One vehicle after the other broke through the rolling barrage. Each driver found independently a place in the village where the long-desired freight could be unloaded. Then at the entrance to the village an ambulance truck received a direct hit and caught fire. With quick decision the platoon leader and his group rushed up in the heaviest of fire and blew up the truck with explosives. We don't want any traffic jam here, for we are right under the eyes of the enemy. The road was



cleared again. We had lost just one vehicle so far, and we had fulfilled our first mission.

Under the most difficult conditions our four hundred wounded comrades at this strongpoint were rescued. Ambulance after ambulance forced its way through to "L" under the protection of the flank security. In the meantime the column of empty trucks had approached and taken over the men who were slightly wounded. While this was going on, combat planes of the Heinkel III type kept off the fire of enemy artillery and antitank cannon. And so, in just three hours' time, the evacuation of four hundred wounded men was accomplished. In the village itself there was great activity. The vehicles were unloaded, and equipment was taken on and carried away. In the meantime night came on. Quietly the most advanced security forces broke contact with the enemy, while the combat train and the combat echelon, like good comrades, continued to cooperate in their salvage work and in providing security.

While this had been going on, the occupants of "T" were assembling for the retreat march under the protection of the tanks. As the last tank left the village an enormous detonation broke the silence of the night. The assault engineers had completed their last task.

The undertaking had been a success. The credit for it was due to no small extent to the combat work of the men of the combat train.

The "hand-trunk" had proved itself, without thought of its own safety. It had not only saved the lives of four hundred of our wounded comrades but had contributed also to the removal of the occupants of the strongpoint at "T" who for a long time had been engaged in the hardest of defensive battles.

### Artillery Fire: Backbone of Defense

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article in *Krasnaya Zvezda* 13 July 1943.]

BATTLE experience gained in the last few days shows clearly how great are the possibilities of our artillery. The tenacity and vitality of our defense in the Orel-Kursk and Belgorod sectors are due chiefly to the effectiveness of our artillery fire and the expert use of all artillery weapons, from small-caliber anti-tank weapons to guns of great power. Battle experience shows that any German maneuver along the front or in its depth, or any powerful armored thrust made for the purpose of breaking through, can be stopped by well organized fire of artillery battalions, provided flexible control and massed employment of artillery weapons are used. When the Hitlerites penetrate our battle formations, the artillery again plays an important part in their destruction. The guns, whose crews are brave and skilful, survive and fire under any conditions of encirclement, mercilessly beating the enemy by point-blank fire.

It is obvious, however, that the decisive battle successes of our artillery should in no way give one a feeling of serene security. The Germans always continue attacking stubbornly, disregarding even the heaviest losses. This makes the artillerymen hit the enemy even harder. It is necessary to take into account all battle lessons and to achieve greater cooperation, exactness of actions, and more effective employment of artillery weapons.

Massed fires of artillery are more effective when the enemy approaches the forward edge of our defenses. There are many examples of a previously prepared and timely executed barrage disrupting battle formations of the advancing enemy and confusing them, thus predetermining their defeat and facilitating our further defensive efforts. The direction of the German thrust may not, of course, coincide with the expected blow in the defense plan. Changes in the battle plans are also possible while the battle is in progress. But this should not lower the effectiveness of the battle activity of our artillery. Artillery commanders should quickly and correctly estimate any situation and, on the basis of this estimate, undertake bold maneuvers of their artillery subdivisions or whole units, in order to disrupt the balance of forces.

Quick maneuvers on wheels, that is, a displacement of artillery to the dangerous zone from other sectors or from the depth, is important for the firmness of the defense belt. To be afraid to leave undefended one terrain line in order to strengthen another line, means a failure to utilize all possibilities for the liquidation of a threat. Quick and rash actions are, of course, out of the question. Indifference is just as unbearable. Having wisely and deeply analyzed the situation in each separate case, artillery commanders should do everything possible in order to accomplish their battle missions in the best possible way and to parry fully the blow of the enemy.

In offensive operations against such forces as the Germans use nowadays in attacking our positions, each element of our artillery battle formations should be fully prepared for all-around defense. Whenever this is done, our batteries, as a rule, come out victorious from individual battles with tanks. In one sector, a group of German tanks and motorized infantry, wedging into our positions, attacked a flank of the firing position of one of our batteries. Our artillery under Captain Vasiliev of the Guards boldly engaged the enemy. Two guns opened fire on the Fascist infantry; the rest, on the tanks. Having lost five vehicles and more than a hundred officers and men, the Germans attacked again, and again they lost seven tanks and achieved no success.

There are many such cases in our battle experience. All this means that the Soviet gun is more fearful to the German tank than the tank to the gun, even if the tank is called "Tiger." It is obvious that in a battle in the depth of the defenses, artillery

needs the active support of infantry. Commanders of forces of all arms should keep in mind the importance of infantry protection for the firing positions of artillery. This allows the artillery to direct all its firepower against enemy vehicles without any interruptions for firing at the enemy automatic-weapons detachments.

Beating off an enemy thrust and upsetting his plans is only one aspect of a battle problem. Another and not less important one is an organization of the defense which will result in the greatest possible losses to the enemy through a merciless grinding of his forces. This depends largely upon the skill of the artillerymen. In a number of sectors our artillerymen inflicted heavy losses on the enemy by chasing him into fire pockets. Fire encirclement of the enemy, the separation of one of his echelons from others, and the subsequent destruction of his manpower and matériel is one of the most effective methods of defense.

Our defense is an active defense. It is combined with decisive counterattacks. Artillery should prepare and support each counterattack. Before the counterattack is launched, artillery should clear the way for our tanks and infantry and suppress the enemy on the sector which our forces are about to enter. During the counterattack, the artillery should protect the flanks of counterattacking units, following them with its fire and on wheels from one objective to another until the mission is fully accomplished. Likewise, it is the duty of the artillerymen to organize artillery pursuit of the enemy. The preparation of counterattacks and their successful accomplishment require considerable flexibility on the part of the artillerymen in controlling and transferring their fires.

### The Flying Fortresses— Reasons for Their Success

[From an article in *The Royal Air Force Quarterly* (Great Britain) September 1943. Sketch from *The Illustrated London News*, 21 August 1943.]

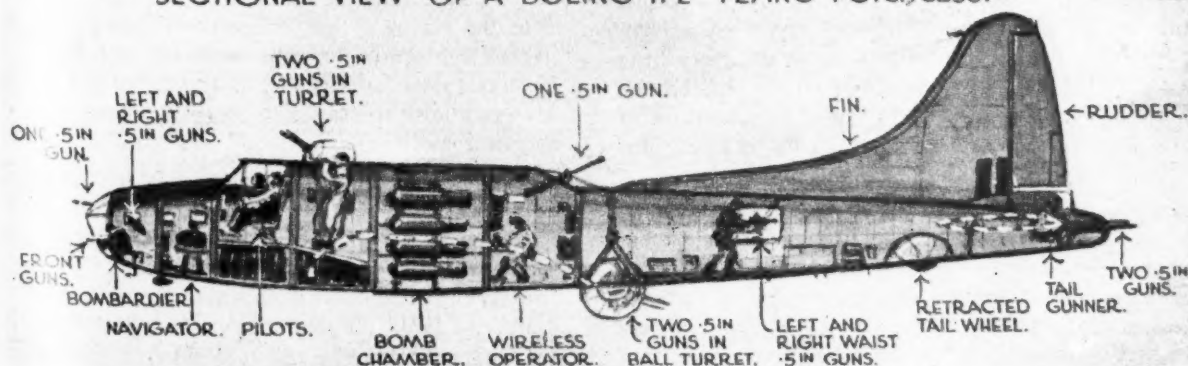
THERE are two main reasons for the American [heavy bombers'] successes: the half-inch machine

gun (0.50) and the tight formation. A formation of Fortresses carries an average of twelve and a half guns per aircraft, the number on each plane varying between eleven and thirteen. The variable numbers are in the nose, where there are either two, three or four hand-operated guns, one of them usually being a 0.30, the only one of this caliber on board. The remaining guns are positioned as follows: two in the top turret behind the pilot's cockpit, one in the radio hatch (a little farther back), one in each waist position, two on the tail and two in the ball or under-turret. The top and under-turrets are fitted with the Sperry Computing Gunsight, a semi-automatic predictor which in theory reduces the path of the bullet from the gun muzzle to the target to a straight line.

There seems to be general agreement among the experts that in the Browning half-inch machine gun the United States has produced the finest bomber armament for present-day mountings. Its range in the latest versions varies from 700 to 1,250 yards, and the rate of fire from 650 to 800 rounds per minute. Muzzle horsepower is between 296 and 327. The 13-gun Fortress, as described above, has a total gun horsepower of 3,629. Against one target (maximum, seven guns) the Fortress guns develop 2,072 horsepower, a punch of 13,000 pounds per projectile and a rate of 87.5 strikes per second. Thus armed, the Fortress can focus more fire power on one target than any other bomber can bring to bear in all. This fire power also exceeds that of any enemy fighter except the Me 109G, which, with five guns (three Mauser 20-mm cannon and two MG 17 rifle-caliber) musters 2,238 gun horsepower. The FW 190 A.3's six guns develop only 1,752 horsepower.

How to make the most effective use of this fire power is a problem which finds solution in the tight formation, which is also designed to reduce vulnerability to a minimum. These formations, in a sense both offensive and defensive in character, are not standardized; they vary according to the experience of Group Commanders and their crews. One type which has proved extremely effective was recently disclosed. In appearance it resembles a horizontal pyramid with the "lead ship"—a vitally important unit—at the apex. The basic unit is the squadron of

### SECTIONAL VIEW OF A BOEING 17E "FLYING FORTRESS."





seven aircraft. There are two V formations of three aircraft each stepped down to the left. The second V flies below and behind the first. Behind and below this second V flies the seventh aircraft, whose function is that of replacement. For a heavy raid three squadrons are combined in formations of twenty-one aircraft. The Lead and the Low squadrons follow the principle outlined above, but the High squadron is stepped *upwards* to the left. As a rule the Low and High squadrons fly on the left and right of the Lead respectively, with the Lead a little ahead. A formation of this sort will muster some 260 guns. One hundred Fortresses (not an unusual number for a raid) would be defended by 1,250 machine guns with a minimum joint fire power of 800,000 rounds per minute or, as someone reckoned recently, an outpouring per minute of over forty tons of lead.

Published reports of combats make frequent reference to head-on attacks by enemy fighters and it is estimated that some 70 percent of the attacks are now made in this way, the enemy apparently preferring to face the hand-operated nose guns rather than the fiercer fire from the turret guns. One method of head-on attack adopted by the Germans is for between thirty and forty fighters to form up in line astern on each flank of the Fortresses just out of the gunners' range. Flying in the same direction as the bombers, the left-hand line of fighters will draw ahead and then turn, coming in diagonally. Opening fire at about 400 yards, they roll, still firing, and break off below the bombers, exposing only their armored undersides to the gunners. When the left line has attacked, those on the right follow. Thus a continuous engagement is maintained.

### Assuring Maneuver of Tanks Is the Duty of All Types of Troops

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article in *Krasnaya Zvezda* 4 August 1943.]

THE BATTLES developing now are characterized by mass use of tanks. Equipped with powerful matériel and having behind them two years' experience of war, tank units of the Red Army are now appearing on the battlefields as our main striking power. This puts great responsibility on the tank personnel and on all other types of troops, which, closely cooperating with our tank units, must do everything to assure the fullest utilization of all the possibilities of mechanized troops and the most effective use of tank tactics, to create the most favorable conditions for maneuver of tanks on the field of battle.

Skilful maneuver of tanks on the field of battle is one of the most important conditions of their combat success. This maneuver must in no case be regarded in an isolated manner. The experience of fighting teaches that whether tanks act as a group in direct support of infantry, or as an echelon for exploiting

success in operative depth, their maneuver must always be inseparable from the general idea of the attack, and often constitutes its basis. In all cases each step in the forward movement of tanks must be carefully weighed and calculated. Precise plan of cooperation and mutual simultaneous combat work of tanks and other types of troops at all stages of the battle is the basis of the successful maneuver of tanks.

The power of tanks is most fully displayed in attack; but the attack produces its maximum effect only when preceded by flawless preparation. Some commanders of forces of all arms, however, lose sight of this condition. Cases are known when, striving to attain greatest surprise, the commanders of forces of all arms have kept the tank personnel in ignorance of the imminent action up to the last moment. Tanks were brought up to the starting line only on the eve of attack; missions were given to the tank personnel on the move, hurriedly. Clearly, when tanks are used in this manner commanders and crews of tank units and subunits do not succeed as they should in learning the terrain and the fire system of the enemy. At best the organization of cooperation is limited here to a hasty survey of the terrain with the binoculars and to the establishment of signals for target designation and the shifting of fire. Without having scouted as they should the engineer and fire obstacles along their combat route, the tanks are forced for a considerable time during the attack to seek out passages through minefields, shifting about in one place and moving along the front, and thereby they suffer losses.

War teaches that the maneuver of tank masses attains its end only when it is carefully thought out and prepared in every particular. The success of maneuver of tanks depends first on agreement and rapidity of movement of infantry, artillery, and aviation. Aviation must reliably cover ground troops from aerial blows of the enemy and, simultaneously with artillery, clear a road for tanks and infantry in the defense zone of the enemy. It may happen that tanks break out far forward, leave the zone of fire of friendly artillery, and fight alone. During such a period the tank commander must have a special signal for calling fighter and bomber planes. At his direction the aircraft act as an air patrol over the region of battle and destroy the most dangerous centers of enemy resistance. Constant and close tactical cooperation between tanks and aviation always allows the tanks to complete their maneuver with success.

Also, close cooperation must exist on the battlefield between the infantry and the tanks. Indisputedly, tanks, destroying the enemy personnel and equipment, are a means for the reinforcing of the infantry. Corresponding to this principle the maneuver of tanks is calculated and developed. But this maneuver may not be put into effect if the infantry



does not put forth every effort to secure the maximum of favorable conditions for the tanks. The main thing here is to maintain the original tempo of the attack achieved by the tanks.

Experience shows that the tempo of the attack is maintained wherever infantry does not separate from tanks, but literally follows in their tracks. On the other hand, when infantry acts indecisively, does not fully use the available means, and lingers long in liquidating separate strongpoints of the enemy, a large gap grows between the infantry and the tanks, and an increasing number of reviving strongpoints springs up in its path. Finally, the forces of the enemy and the attacking infantry reach equality and the infantry is forced to ask for the aid of the tanks, that is, to call them back. But the return of the tanks, combined with the disruption of their combat formations and the abandonment of occupied territory, leads to a slow-down of the attack. As soon as the separate links—subunits—fall out of the chain of the attacking echelon of tanks, many machines come under flank fire of the enemy, and the command of the whole tank organization is lost.

Consequently, the less often the infantry calls for the return of tanks, the more dangerous their combined blow is to the enemy the more quickly they attain decisive success. As the practice of fighting has shown, our infantry, in correct planning of the attack and its energetic conduct, is completely able to keep up with the tanks. All depends on how actively it functions, how decisively it exploits the success attained by the tanks.

Tanks encountering minefields or stopped before obstacles and ditches definitely need the help of the infantry. During this period the infantry must boldly move forward and cover the vehicles from enemy fire, helping them to overcome the obstacles. Of course these actions of the infantry must be supported by the massed fire of all the tanks.

The main task of tanks is the destruction of enemy personnel. But, coming out on the field of battle, tanks inescapably become, as it were, magnets which attract to themselves all the enemy fire means, in particular artillery and frequently also enemy tanks. The tanks are not able alone to carry on intensive fighting with all their opponents. Here is where the artillery comes in, especially self-propelled artillery. Moving after the combat echelons of tanks, it steadily follows the actions of the fire means of the enemy and crushes them with the mass of its fire. If artillery can tie up, in a zone of attack, the artillery of the enemy, the tanks can without trouble take care of the task of supporting the infantry. But artillery attains this only when its combat formations, with sufficient accuracy and firepower, do not stay in one spot, but move along with the combat formations of the tanks.

Success of maneuver of tanks on the battlefield depends on the accuracy of their cooperation with in-

fantry, artillery, and aviation, and on the degree to which the general efforts of all these types of troops are harmonized and synchronized. The smaller the gap between them in time and space and the more compact their combat formations, the more quickly they attain the goal. Organizing the attack, commanders of all types of troops must always create such conditions that the tanks can execute their maneuver uninterruptedly and in the full depth of the hostile defense without forced breaks and stops.

### Self-Propelled Artillery in Armored Combat

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article by Günther Herbst in *Hamburger Fremdenblatt*, Hamburg, Germany, 17 July 1943.]

*The following article is a good, intimate account of moving forward with self-propelled artillery in assault.—THE EDITOR.*

IT IS NOW half past three in the morning. In a half hour we have to be ready for action. The battery commander has just returned from the battalion commander with the order: "Tank Grenadier Battalion 'X' is to take village 'K' with the support of a detachment of self-propelled artillery."

Hardly are the vehicles fueled and supplied with ammunition when the march order is given. A few seconds later over the radio the battery commander says: "First Battery . . . Ready? . . . Battery . . . March!"

All around us are numbers of medium and heavy weapons prepared for action. They are around the large flat area behind the village, under cover of a hill, and are to attack on our right and left. We push forward slowly, still moving in a single column. The voice of the battery commander sounds from the receiver: "Battery Commander to all—1st Platoon in the center, 2d Platoon on the left, 3d Platoon on the right, in echelon!"

In the meantime the tank grenadiers have reached their line of departure and are waiting for the order to attack. At this moment the dive bombers are roaring in from the north and are diving on the village which is hardly three kilometers away and from which a cloud of smoke immediately rises. Now our commander orders: "Battery . . . Forward . . . March!" We are going to attack!

Slowly we move forward across the ridge. The smoke screen has almost entirely disappeared; groups of trees with single houses in between appear beyond the gently declining slope. In the background the terrain rises to sparsely wooded hills. Again the voice of the commander on the radio: "Foxhole to foxhole one! The village and adjoining hollows are probably occupied by enemy tanks!" The reaction of our battery commander is quick: "Load and lock! Armor-piercing shells!"

Our field-glasses are now directed on the village, the depressions, and the hills opposite. Behind us Soviet fighter planes are attacking the assembly area of the tanks. The first bombs explode among us. Our assault gun is now some distance in the lead. The grenadiers can scarcely keep up. "Gun . . . halt!" With a jerk the monster stops. Over there in the hollow are seven black objects—the battery commander discovered them first: "Tanks, enemy tanks!" A terse description of the target goes to the instrument sergeant, then: "Fire at will!" The shot thunders from the barrel; the tank engagement has begun.

Now the other guns are also firing. The Soviets answer immediately. We see muzzle flashes; we hear whistling shells passing overhead. We fire continuously. We watch our enemy through field-glasses glued to our eyes behind our protecting steel shelter. A reddish-yellow flame rises from the first Soviet tank. "A hit!" the commander yells.

A new target! The loader is sweating at the gun. The gun recoils, and the empty cartridges fly outside. Hit after hit is recorded. Through our field-glasses we can observe the Soviets dismount. When a bigger shell strikes us somewhere, a short, almost unwilling jerk is felt in the gun. "Move along!" Undeterred by the enemy fire, the gun moves on and finally stops behind a small haystack.

The battle is in full swing. All around, the flat assault guns stand like turtles, pouring out their fire without interruption. Over the radio we hear reports of the hits by other guns; we hear the battalion commander's quick estimates and orders.

We move on again, apparently high above the ground as we look down upon the slowly advancing grenadiers. Hissing, howling, buzzing shells of all calibers whip through the air. More and more enemy tanks appear.

Just now we hit our target, the fourth T-34 [a heavy Russian tank]. Enemy shells are striking dangerously close. Again we sight on a T-34. Too short . . . too far over . . . to the right. The enemy is also firing. Clouds of smoke hide him again and again. The range is just about two thousand meters. The next shell explodes very close in front of the Soviet tank. "Jam!" the gunner shouts. At the same moment we feel a terrible shock to the entire vehicle. Splinters fly around us; a moment later, a crash. "Get out!" calls the commander, "Get out! Dismount!" Quick as a flash we get up and plunge into the grass, lie flat, and breathe heavily. We start to run to the rear; behind us we hear the voice of our driver: "Help! Help!" "Let's go back!" shouts the battery commander. He runs upright through the fire, his torn pants bespattered with blood, to the neighboring gun, and yells, "Smoke candles! Smoke candles!" The commander rushes back with the smoke pot. In the meantime we cut off the driver's boots and are all lying under cover of our

assault gun on which the Bolsheviks are still firing furiously. Then the protecting screen of smoke rises to give it and us some cover. The instrument sergeant calmly dresses the wounds of our driver since nothing seems to disturb him. Our commander is also wounded; so we run after more smoke grenades. We want—we *have* to save our gun.

Now another assault gun speeds towards us. We pull off our vehicle's tow chains, throw them down, and hook them on the other gun. "To the rear . . . march!" Yard by yard the other gun pulls us back. The wounded driver lies at the front of the gun, well taken care of. We gain the hill and reach the armored prime-mover, on the reverse slope, from which one of our guns is drawing ammunition.

"Let's go back to the battalion commander," says our commanding officer, whose wounds we just finished dressing. The battalion commander is well forward. Therefore we take another assault gun and off we go. In the midst of his battalion we find the battalion commander's assault gun. Next to it in a ditch the battalion commander and a battery commander are standing facing each other. "First Lieutenant K. reports himself as a hospital case," our commander says, hardly able to stand up; but his final words are for the gun crew which has been outstanding in devotion to duty with every man on the job.

Returning in company of another gun to draw ammunition, we see the village in flames. We see the clouds of smoke from many enemy tanks. We observe that the advance of our own vehicles has not been delayed. We are not in the fight any more, but the battle continues, and by evening victory will be ours!

### Field Fortifications in Active Defense

[Translated for the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article by Lieutenant Colonel A. Shnyrkevitch, Soviet Army, in *Krasnaya Zvezda* 1 July 1943.]

DEFENSE is successful when it is stubborn and active. It should be able not only to repel enemy attacks, but also to shift to the offensive. Doubtless, the firmness of the defense depends first of all on the skill and steadfastness of the men, and their determination to fight the enemy to the death. It should be remembered, however, that much more can be accomplished if all the advantages of the terrain are utilized and suitable field fortifications are built.

In constructing field fortifications and in the reconnaissance of the terrain, it is necessary to keep in mind that the entire defense system should be so built that it would insure the shifting of fire and manpower. It is, for instance, obvious that the existence of natural antitank obstacles, especially water obstacles, in front of the forward edge is ex-



tremely advantageous since it makes an attack by enemy tanks more difficult. But this also has disadvantages because such water obstacles make it difficult to change from defense to attack. It is, therefore, advisable in some sectors to locate the forward edge of the defense line in front of the water obstacle.

On one sector of the front, the opposite shore of the river had several commanding heights offering good observation and positions for firing in the direction of the enemy. A marshy plain extended beyond the heights. The commander of the unit, using a map, marked the advanced positions for this sector right along the bank of the river, but a careful reconnaissance of the region showed that it would be better to shift the forward line over to the opposite shore and include the heights in the defense sector. The river remained slightly behind the first line of defense, but it did not lose its importance as an antitank obstacle inasmuch as it hindered the German tanks from reaching the depth of the defense area. Thus, shifting the positions over the river created many advantages for the defenders and placed the enemy at a disadvantage.

When the situation in this sector called for an offensive, the positions on the opposite shore of the river served as a bridgehead which facilitated the crossing of the river. It is important to note that the forward defense line was well chosen, and that the commander in charge of the defense was not merely interested in its defensive qualities, but foresaw and took into account the necessity of undertaking offensive operations.

A careful study of the terrain and the skilful building of fortifications are, possibly, even more important in the construction of a defense in depth. The secret of active defense is to hit the enemy and prevent him from advancing where he wishes. This is achieved by the skilful maneuvering of manpower and firepower. For this reason, following the reconnaissance, a number of roads for troop column movements and approaches for antitank guns, artillery, and tank reserves are cleared and built. This is often overlooked, which affects the course of the battle by hampering the defenders' movements. In a certain battalion defense area, for example, the antitank artillery positions were so located that when the guns had to be moved to alternate positions, it became necessary to lay corduroy roads. This quite naturally delayed the displacement of the battery.

In defense, the maneuverability of manpower and weapons is especially important. That is why a well developed system of trenches and communication passages is necessary for any defense built for effective opposition to enemy attacks. Because of the difficulties involved in the construction of a large trench network, every effort should be made to utilize completely all folds of the terrain throughout the entire depth of the defense area and to build camouflaged paths. At the beginning, communication

trenches are built for crawling or creeping only. This facilitates the movement of men and equipment under enemy fire. Communication passages and trenches are then ceaselessly developed and eventually brought to their normal depth. Such a system of trenches should have firing positions and be suitable for trench warfare and counterattacks.

A very important problem in active defense is the creation of fire pockets [literally "fire bags"]. This necessitates a disposition and combination of firepower which would result in a total destruction of the enemy by sudden fire from two or three directions after he is deliberately allowed to approach or is lured into the depth of the defenses. From the engineering point of view, the construction of fire pockets is not difficult. In most cases it is sufficient to provide carefully camouflaged machine-gun and mortar nests connected by communication trenches or camouflaged paths. These fire nests are placed in semicircular or horse-shoe shaped positions, around ravines, swamps, or gullies, through which the enemy's infantry and particularly his automatic riflemen are likely to infiltrate.

In the building of a whole system of fortifications, in the construction of fire nests, and in the choice of emplacements, care should be taken to secure maximum mobility for all weapons. The experience of this war and the very nature of modern warfare require that all weapons, especially machine guns, deliver maximum fire at the right moment in the direction where the enemy is most dangerous and where heavy casualties can be inflicted upon him. *Dzots* [Russian abbreviation of "wood-earth fire points," which has now become an accepted term denoting a block-house made of logs and earth], which usually have only one embrasure, have a sector of fire up to 60 degrees. By creating a series of *dzots* covering main and supplementary sectors it will be possible to concentrate intensive fire against the principal approaches. Quite frequently, however, it is necessary to take the enemy under strong fire before he enters the sectors covered by our fire. To do this, the *dzots* are supplemented with additional nests and emplacements, which allow the shifting of weapons and opening fire in additional sectors, thus increasing the fire activity of the defense. Here is an instructive example. In defending some important positions, an infantry platoon occupying several *dzots* supplemented them with additional emplacements and machine-gun nests. During the battle the men moved around, occupying the emplacements from which the most effective fire could be delivered. This enabled them to check the onslaught of a numerically superior enemy and to counterattack upon the arrival of reinforcements.

The vitality and effectiveness of the defense increase considerably when all emplacements can be used for more than one weapon, i.e., light machine guns, heavy machine guns, or antitank rifles. Inter-



changeability of weapons during combat can easily be accomplished if the clearances of different infantry weapons have been taken into consideration in the construction of firing points.

The effectiveness of defense operations is increased when the defenders observe the enemy continuously and have a net of well equipped observation posts. Not infrequently, posts located inside the defense area do not provide full observation of all probable approaches to the forward edge of the defenses, particularly at night. A number of observation posts, therefore, should be established ahead of the forward lines. They may be either open or protected by antifragementation shields. They should be camouflaged with particular care. It is necessary to make camouflaged footpaths to approach observation posts, or to build covered communication passages under a barbed-wire net, and connect it with the first line of trenches.

In addition to observation posts, it is sometimes advantageous to move sniper nests, additional emplacements for machine guns, trenches for listening posts, patrol screens, and field patrols in front of the barbed-wire entanglements. Approaches to such trenches should be protected by scarcely noticeable obstacles. Infantry obstacles, especially protective wire fences on wooden posts, should have sound-making devices (cans or empty cartridges) in order to give warning of the approach of enemy reconnaissance.

Active defense demands that the enemy be subjected not only to fire, but also to counterattack. When the defenders launch a counterattack, it often happens that their own antitank and antipersonnel obstacles hinder their action. It becomes necessary to build special passages through the barbed-wire entanglements and mine fields. This, however, reveals our intentions to the enemy and thus prevents surprise action. It can be done only at night or with demonstrative purposes to mislead the enemy.

Thus, in placing obstacles, care should be taken to arrange them so that they will not hinder the maneuvering of the troops or their offensive operations. This can be achieved by digging a series of communication trenches under the network of barbed wire and by leaving breaks in the wire fence. To do this, certain sections of the fence are left without wire and are blocked with *chevaux-de-frise*. Another method is to use ordinary wire strung on wooden posts combined with portable *chevaux-de-frise*.

The same principle applies to laying mine fields. Here it is important not only to seal our front lines against the approach of enemy tanks, but also to provide a safe way for our own tanks when changing to counterattack or offensive. Probable routes for our tanks must, therefore, be given special consideration. If mine fields have been laid, their neutralization must be kept in mind. Each of the sectors must be recorded separately and each mine taken into ac-

count in order to permit safe movement of tanks. It would be best to establish remote-control mine fields in the areas through which our tanks are to pass. When our tanks are to move through specially prepared passages, the crews should be made familiar with their location and with the methods of marking such passages. Tank crews should strictly observe the limits of the passages. Various removable bridges should be available to facilitate the crossing of antitank ditches.

The quality of field fortifications depends not only on the thoroughness of the plan conceived by the senior commander, but also on the creative initiative and ingenuity of the men. It is the duty of field and company officers to make tactical decisions and to plan the general disposition of forces and of the means of defense, but the responsibility for the construction of infantry trenches, machine-gun nests, and gun emplacements rests upon the enlisted men and their squad leaders. An infantry trench should, above all, offer good observation and field of fire, possess main and alternate machine-gun emplacements, and have steps or ladders for mounting the parapet when passing to counterattack. In order to use infantry weapons for fighting enemy aviation, it is advisable to build, along the edge of the trench, specially equipped machine-gun installations and a number of simple devices facilitating the use of the weapons. In short, in building field fortifications, every opportunity should be utilized to insure the maneuverability of weapons, equipment, and personnel. All trenches, obstacles, dugouts, and communication trenches should be constructed so that they will increase the firmness of the defense and can be utilized for maneuver or for passing over from the defense to the offense.

### German Motorized Technical Battalions

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a German article by Dr. Werner Deiters in *Kölnische Zeitung*, Cologne, Germany, 6 August 1943.]

THE MOTORIZED technical battalions attached to our armies carry on endless and complicated tasks which are never mentioned in the communiqués of the armed forces and which seldom come to the attention of the outside world.

In such a motorized technical battalion all the soldiers are professional men. In civilian life they were engineers, firemen, electric power-plant employees, linemen, builders of electrical machinery, magnet winders, lathemen, locksmiths, welders, masons, and carpenters. Roughly speaking, the officers are engineers; the master sergeants, industrial engineers; the noncommissioned officers, master workmen; and the men, skilled workmen. Practically, however, they are more than that, for every new job differs from

the last, and the mastery of one line of work is scarcely ever sufficient. The necessary drawings are often lacking, and in such a case it is necessary laboriously to hunt up the various parts, combine them properly, and above all be able to determine accurately whether everything is right. A faulty repair job would endanger both men and machines. Essentially, this work in the electric power plants, in gas and water works, and in the many other establishments in which these soldiers are engaged is improvisation from beginning to end. Besides the pleasure and satisfaction they get from the accomplishment of their tasks, they have something more to look forward to in the future. "Only once in a lifetime will there be such a schooling in English, French, American, and Soviet machines," declared the commander of a motorized technical battalion. "After this war all my men will be perfect managers for industrial establishments. Frequently, noncommissioned officers have put entire power lines in order."

In all this it is not professional knowledge alone that is important, for from the commander on down to the last man all must also be endowed with the ability to manage an industrial establishment, a capability which above all consists in being able to commandeer the right man for the job. If, for instance, there is work to be done in connection with the complicated manufacture of some chemical, it does not suffice to send out a soldier who is technically fitted for the job. It is better to put in charge of the job a master sergeant, a noncommissioned officer of lower grade, or a lance corporal, who is not only a master of the special manufacturing process but who will also be able to decide immediately whether the work can be done, or whether in view of the extent of damage it cannot be done. In addition to being able to do the work, one must also have the ability to handle workers properly, for the motorized technical battalions are obliged to depend on the cooperation of native labor in all instances; otherwise they would be able to take charge of but a small part of the establishments which come under their control. The restoration of the occupied eastern areas is in every respect a "school for advanced pupils."

Everyone belonging to the motorized technical battalions must at the same time be a fighter. His unit belongs to the army and advances with the army, and it must be able to defend itself. This is true especially of advance detachments who take establishments out of the hands of the enemy, extinguish fires, remove explosive charges, and provide protection against Soviet guerrillas.

Although a motorized technical battalion never engages in any commercial operations or even dares to think of such a thing, yet in its long journey through the new and extensive industrial regions, it safeguards for German industrial establishments property of untold value. At the moment it is not a

question of the millions upon millions of Reichsmarks that this might amount to nor of whether a certain repair job will pay, but only of whether the concern can quickly be made to operate again. For their purpose the restoration does not even have to be complete, although all motorized technical battalions have the ambition to leave no work undone.

All factories require power. Consequently technical battalions are interested particularly in motors, turbines, pumps, furnaces, boilers, etc. When they are not occupied with the matter of power supplies, they may be engaged in the restoration of complicated factories producing foodstuffs, machinery, or chemicals. Technical troops have put the shipping of whole rivers into operating condition by the recovery of sunken boats, the installation of motors, and the improvement of loading docks. Besides, there is a special battalion for mining operations, the Motorized Technical Mining Battalion, which has given excellent service in the mining of iron and coal.

The tasks are assigned by the Chief Quartermaster of the Army through the Army Industrial Leader who acts as industrial adviser and who at the same time supervises the Economic Commissions. As soon as the wheels are turning again the unit of the motorized technical battalion leaves, and turns the establishment over to the Todt Organization or the Industrial Commission.

Their rich store of experience gives the technical battalions the power to remain undiscouraged in the face of anything. In places where the professional civilian would not stir a hand, the technical troops content themselves at first with small, sometimes extremely small, sources of power for the preparation of machine parts with the help of which they develop greater capacities. They have only one thought, to help their comrades at the front! Their contact with the needs of the army is a powerful incentive to develop the production of articles of equipment, repairs for guns, foodstuffs, etc., and also to see to it that the soldiers do not freeze in the winter (bunker stoves) and that they are not obliged to sit in the dark. At the same time these technical troops lay the first foundation for the restoration of industries which, after the army has moved on, are able to send their products to the home land. The "how" of this work will provide some of the most interesting chapters in the history of military economics.

### Breakthrough of German Defense

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article by Major B. Korol, Soviet Army, in *Krasnaya Zvezda* 16 July 1943.]

IN THE offensive operation undertaken by troops of the Red Army north of Orel, tanks, aviation, artil-



lery, and infantry are taking part. Each type of troops is given a role which permits the use of its combat qualities to the maximum. Here our infantry, which possesses offensive spirit to a high degree and is well trained, plays the principal part. The characteristic features of our tactics of breakthrough of hostile defense have been clearly displayed in these offensive battles north of Orel.

In the course of many months the Germans had built up a powerfully fortified defense, equipping it with artillery, mortars, and machine guns. The enemy defense in this sector of the front was organized in many zones; that is, it was calculated to offer prolonged resistance without bringing reserves from the deep rear into the battle. Battalion defensive centers consisted of three lines linked by a dense net of communication trenches and completely organized for all-around defense. Especially developed was the system of obstacles, primarily mines. Minefields girdle German positions and fill all intervals between them and the lines of wire and other obstacles.

Naturally, the plan of the breakthrough was made in accordance with the character of such powerful defensive positions. Measures were taken for concealed concentration of troops, assuring the suddenness of the attack. The element of surprise was combined with exceptional cooperation between the various arms which, thanks to long study of the enemy and mass reconnaissance by fighting carried out on the eve of the attack, received a clear picture of targets which had to be silenced or destroyed. Distribution of these objectives among troops of the various arms aided the organization of fires of the several participating elements at various stages of the battle, linking into one strictly determined system the action of infantry and tanks with that of artillery and air. It remained only to realize accurately the plan of cooperation, which was assured by a careful preparation in the course of training in combat firing prior to the offensive. Suffice it to say that thanks to training, soldiers of infantry units knew their tank crews by face and name. Habits of cooperation gained in training were fully used in combat by infantry platoons, gun crews, and tank crews. For this reason the breakthrough of the defense proceeded systematically.

It is important to note the special character of preparation of the infantry for combat. Three types of infantry were, so to speak, organized. They were of the following types: assault; light, for rapid maneuver in depth behind tanks; and night. The problem of the last named is not to allow the enemy to disengage at night, to scout him, to attack under the cover of darkness; that is, to keep up the continuity of combat between daylight engagements.

The offensive began with mass reconnaissance by fighting, as a result of which the system of hostile defense was determined and some positions success-

fully seized, which helped the success of the attack. Reconnaissance also had the task of pinning the enemy infantry to its first zone of defense, in order to obtain greatest effect from the artillery preparation. Finally, reconnaissance by fighting helped the actions of obstacle-clearing detachments which worked mainly at night.

Immediately following the reconnaissance there began the breakthrough of the hostile defense. Our artillery was committed. Shots and bursts melted into one dense thunder lasting more than two hours without a break. Artillery of various calibers laid down a heavy fire on the entire zone of hostile battalion centers of defense.

Closely behind the shell bursts, the infantry attacked, accompanied by heavy tanks. As the defense was strong and consisted of several lines, the regiments moved in deeply echeloned formations. In this case this was fully justified. At the end of the day the whole tactical zone of defense was broken through, and elements specializing in the development of the breakthrough went into action. The high tempo of the breakthrough was helped by the circumstance that the strongest centers of resistance of the first line were at once by-passed by units engaged in developing the battle in depth and were surrounded by other troops especially assigned for this task. These key positions of the enemy soon fell. Our units seized here a large number of prisoners.

It is necessary to speak in particular about aviation. Its task was to secure domination of the air, to prevent enemy bombardment of combat formations of our advancing units. And this was done. When the artillery preparation ceased and the infantry and tanks attacked, our bombers and assault planes delivered their blows on the enemy's artillery and mortar positions, and partly on his infantry. The assault planes worked with special effect, denying the Germans the opportunity to conduct artillery and mortar fire.

Simultaneously, the aviation watched the retreating hostile troops and the approaching reserves, which were attacked by special assault units. Fighter aircraft, which were providing close protection to our attacking combat formations, just as effectively protected the units engaged in the development of the breakthrough. Finally, separate groups of aviation acted against centers of communication and command, which helped to disorganize the system of hostile defense on the first day of action.

As a result of coordinated efforts of all types of troops, the enemy failed to hold his defensive lines. Neither the retreating troops of the Germans nor their reserves could entrench themselves even on lines in the depth of the defense. Fighting at once took on the nature of a battle of maneuver. A number of hostile centers of defense in the rear were surrounded and destroyed. Counterattacks, undertaken by the enemy on the flanks with tank and infantry



forces, were beaten off, as a rule causing the destruction of the counterattacking forces. The effort to counterattack with forces of a fresh tank division also collapsed. This German division was broken up, its several parts surrounded, and at the present time they are being finished off. In this engagement our assault aviation also played an important role.

### Tactical Training of Tank Crews

[Translated at the Command and General Staff School, Fort Leavenworth, Kansas, from a Russian article by Brigadier General M. Korolev, Armored Force, Soviet Army, in *Krasnaya Zvezda* 19 June 1943.]

THE SUCCESS of a tank unit in battle depends largely on the tactical training of its tank crews and their skill in meeting various situations. Many examples can be given of how crews with proper training can rapidly orient themselves in difficult situations and help the unit complete its mission successfully. On the other hand, there are cases showing the disastrous effect inadequate training of crews can have on the course of a battle.

The more the experience gained in battle is utilized in training, the more effective it will be. And it is not difficult for an active unit to generalize upon and utilize its battle experience. A battle journal should be kept for each tank and all operations of the tank crews should be discussed and analyzed in detail. In the analysis, the course of an engagement is reconstructed. Concrete and convincing proof is given as to what was of value in the work of a crew and what has to be avoided in the future. This trains the men to analyze their work, widens their mental horizon, and improves their knowledge of the subject. Such analyses are of utmost importance to any tank unit.

The training of crews is not limited to discussion. It is necessary to have regular studies, group exercises, short practice battles, and field exercises together with artillery and infantry units. All this is perfectly feasible and necessary under conditions at the front.

First of all, the students make a thorough reconnaissance of the terrain. To start with, the terrain of a projected battle is carefully studied on the map. If in the day's assignment the tank crew has to move twenty kilometers, then it has to study the features of the terrain for twenty kilometers. If, on the other hand, the plan calls for a movement of 100 to 150 kilometers, the crew must be familiar with the route for that distance. The men should be trained well enough to be able to describe from memory all the characteristics of the terrain studied on the map. Knowledge of terrain appreciation is important because it is not always possible to reconnoiter enemy-held territory.

Practical terrain exercises follow the map studies. Formed in reconnaissance units, the men determine

the accessibility of certain areas for tanks, the passability of natural and artificial obstacles, and the location of suitable assembly areas, lines of departure, concealed approaches, field of vision, most advantageous positions for deployment, possible battle courses, and directions for tank attacks. Making terrain sketches of the reconnoitered regions is of great benefit to the students. As a result of this work, tank crews should have a perfect knowledge of the terrain.

The best way to train tank crews is to move them out to our advance positions. Reserve and replacement units should be given reconnaissance exercises on the training field. The instructor gives his students data about the enemy, furnishes them with overlays of aerial maps and sketches of mine fields, and informs them about the disposition of our troops. These maps and sketches, formerly considered of importance only to commanding officers of battalions and companies, should be used by tank crews as well. Tank personnel must be able to use these maps intelligently and orient them skilfully on the terrain. It is also important for them to know how to study the life and activities of the enemy and determine where his antitank obstacles are being constructed. The following example illustrates clearly the importance of such exercises.

A detachment of tanks and infantry was recently ordered to take a hill. The tank unit commander, Captain Salyukov, organized the reconnaissance. A long, patient observation of the enemy was carried out. As a result, enemy antitank guns, mine fields, and artillery positions were located. In addition, the line of departure with concealed approaches was discovered. The careful reconnaissance made it possible to work out an original plan of attack against both flanks of the enemy. Our tanks and infantry occupied the hill in fifteen minutes and consolidated their positions.

In addition to studying enemy positions by means of direct observation, tank troops should be able to use skilfully the information obtained by other branches of the service. Infantry and artillery units usually have much valuable information about the terrain and the enemy. Neglecting these sources makes the work unnecessarily difficult. On one sector of the front our tank troops had to reconnoiter a gully which ran along our advance positions. Much time was wasted and no results were achieved. When the infantry was asked for information it gave detailed data which proved to be of great value during the battle.

Quite often enemy advance positions are reconnoitered by using reconnaissance in force. In such cases tanks are added to reconnaissance units. The tank crews must be thoroughly familiar with the methods of combat reconnaissance. They must know with what forces and how long the objectives they seize have to be held. After occupying the objective,

the tanks should not become immobile fire nests, but should maneuver in a sector most suitable for disengagement.

One of the duties of tank crews is to reconnoiter the battlefield continuously. Each tactical exercise, therefore, should develop in students skill in the use of various reconnaissance methods and teach them to observe and evaluate the relative importance of events. During a recent battle, tank commander Lieutenant Weinstein noticed in front of him a clump of suspicious bushes with yellowish leaves. He fired at the bushes and found them to contain two anti-tank guns. The lieutenant put them out of action with a few rounds.

In teaching tank crews the methods of fighting entrenched infantry and its weapons, the importance of flank fire (along enemy trenches) and of shrapnel fire should be emphasized. Training is also necessary in the use of infantry mortars mounted on tanks. Mortar fire directed against personnel in trenches can quickly smoke them out. Training in throwing grenades from tanks is also very useful. Very good results were obtained from oblique fire of tanks moving in battle formation. Consequently, such training is also necessary during field exercises. In general, as in the case of reconnaissance training, studies in the use of various weapons should be based on practical battle problems. This can be done only when battle experience is thoroughly analyzed.

Experience has shown, for instance, that in attacking *dzots* [a *dzot* is a blockhouse constructed of logs and earth; originally an abbreviation of "wood-earth firepoint," it has now become an accepted term] the use of fragmentation shells is very effective. It is important to remember, however, that the enemy often places antitank guns in the vicinity of *dzots*. Tank crews should be taught to destroy these guns while attacking such fortifications. Experience has shown that it is best to destroy them not by frontal attack but by flank machine-gun fire and fragmentation grenades.

German assault guns should be attacked either from the flanks or from the rear because these guns have no towers and their angle of traverse is small. This method should be learned thoroughly as these guns are met quite frequently in combat.

It is well known that artillery is the most effective weapon for the destruction of tanks. Our tanks, however, are often called upon to engage enemy tanks, and this requires certain knowledge and experience. In fighting heavy German "Tiger" tanks, it is best to attack them from the flanks and the rear, firing armor-piercing shells at the back, sides, and gun casing. Firing at the suspension system with fragmentation shells puts heavy tanks out of action. The ability of tank crews to use cover while firing will be of great importance. Lieutenant Chernov, commanding a "T-34" tank, noticed some German tanks while attacking. He took cover, opened fire, and destroyed four enemy vehicles. Subsequently, he destroyed seven more heavy and medium tanks in the same area.

The peculiarities of modern warfare with its unexpected turns of events should be emphasized during the entire course of training. This is a definite requirement for the development of initiative and tactical shrewdness, so necessary in meeting complicated situations of modern warfare. In the course of a meeting engagement one of our tanks lost contact with its unit. Taking cover in bushes, the tank commander began to get his bearing without leaving his vehicle. In the meantime three medium and one heavy enemy tank came up closely. A German officer apparently also lost, crawled out of the leading tank and began to orient himself. The German was dumb-founded when he saw the gun muzzle of our tank in front of him. Before he could act, three German vehicles were completely destroyed by the fire of our tank gun. Encouraged by this success our tank commander started ahead. When his tank moved out of the bushes, another group of three German tanks was noticed. Approaching them from the rear, he opened fire and destroyed them one after another.

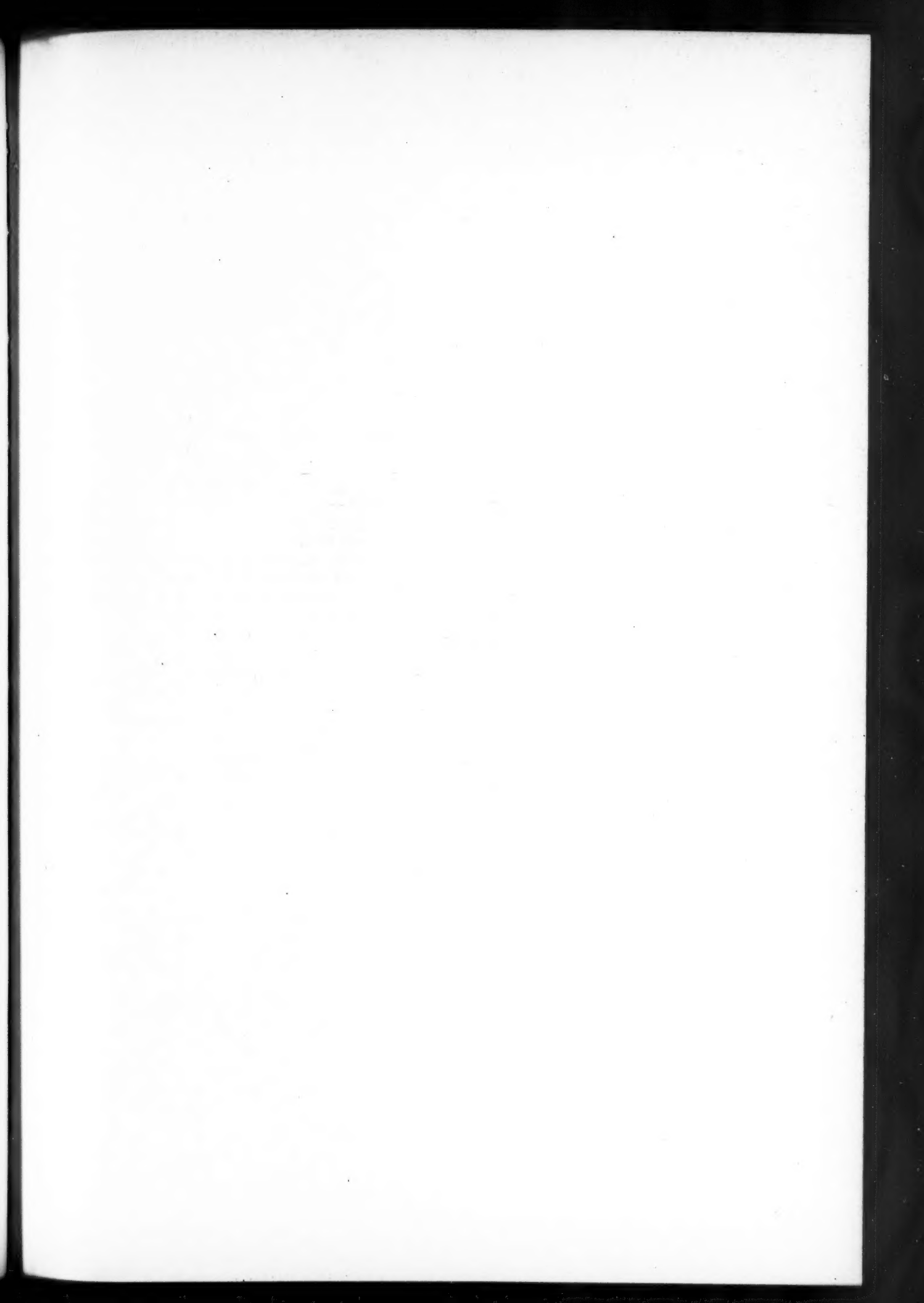
Such episodes cannot be exactly reconstructed during training exercises. But taking them into account in order to complicate, change, and vary the situation in training exercises is of prime importance in developing initiative in the students.

Battle episodes should be carefully studied as a basis for tactical training. Complicated situations in training problems based on battle experience should develop courage and decisiveness, as well as skill in deceiving, shattering, and destroying the enemy.

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Strategy is the art of making use of time and space. I am more parsimonious of the former than of the latter. Lost space I can always recover; but lost time, never.

—Gneisenau







The Chief of Staff,  
War Dept.,  
Washington, D.C.